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[Intervention Review]

Chinese herbal medicines for treating osteoporosis

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ABSTRACT

Background

Chinese herbal medicines have been used for a long time to treat osteoporosis. The evidence of their benefits and harms needs to be systematically reviewed.

Objectives

To assess the beneficial and harmful effects of Chinese herbal medicines as a general experimental intervention for treating primary osteoporosis by comparing herbal treatments with placebo, no intervention and conventional medicine.

Search methods

We searched the following electronic databases to January 2013: the Specialised Register of the Cochrane Complementary Medicine Field, CENTRAL, MEDLINE, EMBASE, LILACS, JICST-E, AMED, Chinese Biomedical Database and CINAHL.

Selection criteria

Randomised controlled trials of Chinese herbal medicines compared with placebo, no intervention or conventional medicine were included.

Data collection and analysis

Two authors extracted data and assessed risk of bias independently. Disagreement was resolved by discussion.

Main results

One hundred and eight randomised trials involving 10,655 participants were included. Ninety-nine different Chinese herbal medicines were tested and compared with placebo (three trials), no intervention (five trials) or conventional medicine (61 trials), or Chinese herbal medicines plus western medicine were compared with western medicine (47 trials). The risk of bias across all studies was unclear for most domains primarily due to inadequate reporting of study design. Although we rated the risk of selective reporting for all studies as unclear, only a few studies contributed numerical data to the key outcomes.

Seven trials reported fracture incidence, but they were small in sample size, suffered from various biases and tested different Chinese herbal medicines. These trials compared Kanggusong capsules versus placebo, Kanggusong granule versus Caltrate or ipriflavone plus

Caltrate, Yigu capsule plus calcium versus placebo plus calcium, Xianlinggubao capsule plus Caltrate versus placebo plus Caltrate, Bushen Zhuanggu granules plus Caltrate versus placebo granules plus Caltrate, Kanggusong soup plus Caltrate versus Caltrate, Zhuangguqiangjin tablets and Shujinbogu tablets plus calcitonin ampoule versus calcitonin ampoule. The results were inconsistent.

One trial showed that Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol had a better effect on quality of life score (scale 0 to 100, higher is better) than calcium carbonate tablets and alfacalcidol (mean difference (MD) 5.30; 95% confidence interval (CI) 3.67 to 6.93).

Compared with placebo in three separate trials, Chinese herbal medicines (Migu decoction, Bushen Yigu soft extract, Kanggusong capsules) showed a statistically significant increase in bone mineral density (BMD) (e.g. Kanggusong capsules, MD 0.06 g/cm^3; 95% CI 0.02 to 0.10). Compared with no intervention in five trials, only two showed that Chinese herbal medicines had a statistically significant effect on increase in BMD (e.g. Shigu yin, MD 0.08 g/cm^3; 95% CI 0.03 to 0.13). Compared with conventional medicine in 61 trials, 23 showed that Chinese herbal medicines had a statistically significant effect on increase in BMD. In 48 trials evaluating Chinese herbal medicines plus western medication against western medication, 26 showed better effects of the combination therapy on increase in BMD.

No trial reported death or serious adverse events of Chinese herbal medicines, while some trials reported minor adverse effects such as nausea, diarrhoea, etc.

Authors' conclusions

Current findings suggest that the beneficial effect of Chinese herbal medicines in improving BMD is still uncertain and more rigorous studies are warranted.

PLAIN LANGUAGE SUMMARY

Chinese herbal medicines for osteoporosis

Review question

We conducted a review of the effects of Chinese herbal medicines for people with primary osteoporosis. We found 108 studies with 10,655 people.

Background: what is primary osteoporosis and what are Chinese herbal medicines?

Bone is a living, growing part of your body. Throughout your lifetime, new bone cells grow and old bone cells break down to make room for the new, stronger bone. When you have osteoporosis, the old bone breaks down faster than the new bone can replace it. As this happens, the bones lose minerals (such as calcium). This makes bones weaker and more likely to break even after a minor injury, like a little bump or fall.

Chinese herbal medicines are products made from any part of medicinal plants (leaves, stems, buds, flowers or roots). Sometimes non-plant based components (for example insects, deer horn, snake, various shells and powdered fossil) are included. These can be used in the form of raw plant materials, or water or alcohol extracts of raw plant materials. Herbs can also be taken by mouth as capsules, tablets or liquids, or as injections.

Chinese herbal medicines are widely used in China for primary osteoporosis but their benefits and harms have not been appraised in order to inform clinical practice.

Study characteristics

After searching for all relevant studies up to January 2013, we found 108 studies with 10,655 people with osteoporosis. Ninety-nine different Chinese herbal medicines were tested and compared with placebo (three trials), no intervention (five trials) or conventional medicine (61 trials), or Chinese herbal medicines plus conventional medicine were compared with conventional medicine (47 trials). The average length of treatment was 5.7 months (ranging from 3 to 12 months).

Key results: what happens to people with osteoporosis who take Chinese herbal medicines?

New fractures

We are uncertain whether Chinese herbal medicines reduce the chance of having a new bone fracture. Seven trials evaluated the incidence of fractures. However, these trials were small and had flaws in their methods.

Quality of life

People who took Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol rated their quality of life to be 5.30 points better on a scale of 0 to 100 after three months compared to people who did not take the herbal medicine.

People who took Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol rated their quality of life to be 56.05 on a scale of 0 to 100.

People who took calcium carbonate tablets and alfacalcidol rated their quality of life to be 50.75 on a scale of 0 to 100.

Serious side effects or deaths

No serious side effects or deaths occurred in the trials.

We often do not have precise information about side effects and complications. This is particularly true for rare but serious side effects. Possible side effects may include a mild stomach ache or diarrhoea.

Bone mineral density (the amount and type of minerals in the bone)

We found studies that compared Chinese herbal medicines with placebo (fake treatment), with no treatment and with conventional medicine. We also found studies that compared Chinese herbal medicines plus conventional medication with just conventional medication.

Compared to placebo (fake treatment), three studies showed that bone mineral density increased slightly with Chinese herbal medicines.

Compared to no treatment or conventional medicine, some studies showed an increase in bone mineral density with Chinese herbal medicines while others did not.

When Chinese herbal medicines plus conventional medication was compared with just conventional medicine, some studies showed an increase in bone mineral density while others did not.

Quality of the evidence

In people with osteoporosis:

- Chinese herbal medicines may improve bone mineral density and quality of life slightly. Further research is likely to change this estimate of how Chinese herbal medicines affect bone mineral density and quality of life.

- We are uncertain whether Chinese herbal medicines reduce the chance of having a new bone fracture.

- No trial reported death or serious side effects.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Chinese herbal medicines versus placebo for osteoporosis

Patient or population: patients with osteoporosis
Settings: inpatients
Intervention: Chinese herbal medicine versus placebo

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments (95% CI)
	Assumed risk	Corresponding risk				
	Control (placebo)	Chinese herbal medicine				
New fractures (Kanggusong capsule versus placebo) Follow-up: 12 months	**185 per 1000**	**0 per 1000** (0 to 157)	**RR 0.05** (0 to 0.85)	104 (1 study)	⊕◯◯◯ **very low**[1,2,3]	We are uncertain about the estimate[3]
Quality of life	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Death	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Serious adverse events	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
BMD of lumbar spine (Kanggusong capsule versus placebo) Follow-up: 12 months Scale from: 0 to 4	The mean BMD in the control groups was **0.82 g/cm^3**	The mean BMD in the intervention groups was **0.06 higher** (0.02 to 0.1 higher)		140 (1 study)	⊕⊕◯◯ **low**[1,4]	MD 0.06 g/cm^3 (0.02 to 0.10) Absolute risk difference 2% (1% to 3%) Relative per cent change 7% (2% to 12%) NNT 5 (3 to 13)

BMD of ulna (Bushen Yigu soft extract versus placebo) Follow-up: 3 months Scale from: 0 to 4	The mean BMD in the control groups was **0.59 g/cm^3**	The mean BMD in the intervention groups was **0.06 higher** (0.02 to 0.1 higher)		59 (1 study)	⊕⊕◯◯ **low**[1,4]	MD 0.06 g/cm^3 (0.02 to 0.10) Absolute risk difference 2% (1% to 3%) Relative per cent change 10% (3% to 17%) NNT 3 (2 to 8)
BMD of radius (Bushen Yigu soft extract versus placebo) Follow-up: 3 months Scale from: 0 to 4	The mean BMD in the control groups was **0.58 g/cm^3**	The mean BMD in the intervention groups was **0.06 higher** (0.03 to 0.09 higher)		59 (1 study)	⊕⊕◯◯ **low**[1,4]	MD 0.06 g/cm^3 (0.03 to 0.09) Absolute risk difference 2% (1% to 2%) Relative per cent change 10% (5% to 16%) NNT 3 (2 to 6)

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
BMD: bone mineral density; **CI:** confidence interval; **MD:** mean difference; **NNT:** number needed to treat; **RR:** risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]No information on adequate sequence generation and not all the outcomes that were of interest in this review were reported.
[2]The total population size is less than 300 (a threshold rule-of-thumb value).
[3]Seven trials reported on the outcome of fracture incidence, but these trials were small in sample size, suffered from various biases, tested different Chinese herbal medicines and the results were not consistent.
[4]The total population size is less than 400 (a threshold rule-of-thumb value).

BACKGROUND

Description of the condition

Osteoporosis is a worldwide common public health problem with high prevalence (Cole 2008; Woolf 2003). It is defined as a progressive, systemic disease characterised by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased susceptibility to fractures (Diez 2002; NOF 2014; Wylie 2010). While osteoporosis is often thought of as an older person's disease, it can strike at any age (Cole 2008; NOF 2014). It is estimated that worldwide osteoporosis is currently a problem for 200 million middle-aged and elderly persons, and there are 75 million people with osteoporosis in America, Western Europe and Japan. In terms of its incidence rate osteoporosis has been ranked as seventh among common diseases worldwide (Nguyen 2000; Xue 2000). In China, there are already 50 million people with osteoporosis and a large-scale epidemiological study found that the prevalence in people over 50 years is 50% (Qiu 2001). As life expectancy increases, this number is expected to continue to grow (Bengner 1988; Cumming 1997; Kushner 1998).

Osteoporosis is a highly prevalent disorder associated with sequelae that often have devastating effects on the quality of life of those affected, and may be a high risk factor for death. Morbidity and mortality rates from osteoporosis-related injuries are high (Diez 2002; Holroyd 2008). Osteoporosis-related sequelae therefore have a major impact on healthcare costs, both direct and indirect, especially those related to hip fracture (Diez 2002; Holroyd 2008). Three kinds of major fractures are associated with osteoporosis: hip, vertebrae and the distal forearm (such as wrist) (Diez 2002; NOF 2014). Epidemiologic studies from several countries have reported the incidence and impact of hip fractures, and their absolute number is expected to double in the next 25 years, with a projected total of more than six million occurrences per year throughout the world by the year 2050 (Genant 1999). Some studies have found that the mortality rate associated with hip fracture is 15% to 25%, caused by complications such as pneumonia, other infections and cardiac insufficiency. The expense of therapy and hospitalisation is USD 25 billion each year (Xue 2000). It is difficult to calculate the incidence of spinal fractures because many are asymptomatic or may not be diagnosed, however they are also an important fracture in many elderly people (Diez 2002). Therefore, osteoporosis has become an important social and medical care problem.

Osteoporosis is often called the 'silent disease' because bone loss occurs gradually and without symptoms or warning signs until the disease is advanced (Cole 2008; NOF 2014; Wylie 2010). Some people may suffer from chronic or acute pain, muscle fatigue and limited mobility, but they may not know that they have osteoporosis until their bones become so weak that a sudden strain, bump or fall causes a fracture or a vertebra to collapse. Collapsed vertebrae may initially be felt or seen in the form of severe back pain, loss of height or spinal deformities such as kyphosis (stooped posture) (IOF 2014; Xia 2001).

At present, the pathogenesis of osteoporosis is still not clear, but may be associated with heredity, poor nutrition, malabsorption, gonadal insufficiency, inadequate physical activity, lack of sunlight irradiation and smoking (Diez 2002; Raisz 2005; Winsloe 2009; Zhou 2001b).

Description of the intervention

Currently, there are a range of therapeutic approaches for osteoporosis. Conventional medicines include oestrogen, raloxifene, bisphosphonates (such as alendronate, etidronate, risedronate), calcitriol, calcitonin, Caltrate (Confavreux 2012; Diez 2002; Guo 2003a; Guo 2003b; Horst-Sikorska 2011; Leong 2002; Rizzoli 2012; Sambrook 2000; Silverman 2012; Wells 2008a; Wells 2008b; Wells 2008c; Zhang 2012). Although fluoride has the ability to increase bone mineral density (BMD) at the lumbar spine (Haguenauer 2005), it has been found ineffective for reducing vertebral fractures in postmenopausal women with osteoporosis. Oestrogen therapy has limited effectiveness and long-term use increases the risks of breast cancer, endometrial haemorrhage and endometrial cancer (Leong 2002). A Cochrane systematic review shows that exercise has the potential to be a safe and effective way to avert bone loss in postmenopausal women (Howe 2011). Although concerted research efforts have been made to identify safe and effective therapies, treatment options are still needed.

In China and other countries, people are looking for alternative modalities to treat osteoporosis and Chinese herbal medicines are one of the popular therapies used. Chinese herbal medicines are defined in this review as products derived from any part of medicinal plants (e.g. leaves, stems, buds, flowers, roots or tubers) used for the treatment of osteoporosis (Rates 2001) and some non-plant based component (e.g. insects, deer horn, snake, various shells and powdered fossil, etc.) are sometimes included. Chinese herbal medicines can be in the form of raw plant materials, or water or alcohol extracts of raw plant materials, or herbal formulations in capsules, tablets, decoctions or injections.

How the intervention might work

In China, many herbs have been tested in clinical trials and claims made as to their effectiveness in treating osteoporosis (Cao GY 2010; Dong Y 2010; Jian QQ 2010; Wang JM 2008; Zhang XG 2011). For example, Zhang et al found that Zhuangguyin (a formula containing different herbs, such as common yam rhizome, red and white peony root, Chinese angelica, Radix codonopsis pilosulae, liquorice root, etc. plus dry powder of Placenta hominis) improved primary osteoporosis, and proposed that the therapy improved the BMD of the lumbar spine and femoral neck (Zhang XG 2011). One clinical trial found that Gujian capsule (studied

and produced by Xiyuan Hospital under the Institute of Traditional Chinese Medicine) improved BMD, increased levels of calcitonin, oestradiol, testosterone, follicle-stimulating hormone and luteinising hormone, and decreased levels of parathyroid hormone (Meng 2003).

Why it is important to do this review

Cochrane reviews have assessed the efficacy of Chinese herbal medicines in the treatment of many conditions such as atopic eczema (Gu 2013), cholelithiasis (Gan 2013), colorectal cancer (Guo 2012), gastric cancer (Yang 2013), endometriosis (Flower 2012), heart failure (Chen 2012), osteoarthritis (Cameron 2013) and nephrotic syndrome (Chen 2013; Feng 2013), but not osteoporosis. Chinese herbal medicines are widely used in China for the treatment of osteoporosis and many herbal drugs have been approved by the China State Food and Drug Administration (SFDA) for the market. Each year, many clinical trials are published in China, however, there is no critical appraisal of the evidence on the potential benefits and harms of Chinese herbal medicines for treating osteoporosis. The purpose of this review is to systematically identify available randomised clinical trials of Chinese herbal medicines for primary osteoporosis to appraise their benefit and harm in order to inform clinical practice.

OBJECTIVES

To assess the beneficial and harmful effects of Chinese herbal medicines as a general experimental intervention for treating primary osteoporosis by comparing herbal treatments with placebo, no intervention and conventional medicine.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised clinical trials were included irrespective of blinding, publication status or language. For adverse effects associated with medicinal herbs in osteoporosis treatment, we planned to include data from cohort studies for the evaluation of safety.

Types of participants

Study participants with primary osteoporosis or osteopenia regardless of age, gender or ethnic origin were included. Those with secondary osteoporosis including corticosteroid-induced osteoporosis due to diseases affecting metabolism of bone and the liver, kidney and haematopoietic system, and disability of the heart and cerebral vessels, were excluded.

Osteoporosis could be diagnosed on the basis of one of the following criteria for bone mineral density (BMD) levels. BMD was detected by one of the following methods of examination: single photon absorptiometry (SPA), dual photon absorptiometry (DPA), quantitative computed tomography (QCT), dual energy X-ray absorptiometry (DXA) or peripheral dual energy X-ray absorptiometry (pDXA).

The World Health Organization (WHO) have recommended criteria for primary osteoporosis based on BMD levels (WHO 1994):

- Normal: BMD is within +1 or -1 standard deviations (SD) of the young adult mean.
- Osteopenia (low bone mass): BMD is between -1 and -2.5 SD below the young adult mean.
- Osteoporosis: BMD is -2.5 SD or more than the young adult mean.
- Severe (established) osteoporosis: BMD is more than -2.5 SD and one or more osteoporotic fractures have occurred.

The Chinese diagnostic criteria for primary osteoporosis based on BMD levels (Osteoporosis 1999):

- Normal: BMD is within +1 or -1 SD of peak bone mass of the same race, gender and region.
- Osteopenia (low bone mass): BMD is between -1 and -2 standard deviations below peak bone mass of the same race, gender and region.
- Osteoporosis: BMD is -2 SD or more than the peak bone mass of the same race, gender and region.
- Severe (established) osteoporosis: BMD is more than -2 SD and one or more osteoporotic fractures have occurred.

Types of interventions

The experimental interventions included single herbs, combinations of herbs or Chinese proprietary medicines. There was no standard for the classification of Chinese herbal medicines. Therefore, to make it easier, we classified Chinese herbal medicines into two major types: a) Chinese proprietary medicine which was approved by the China State Food and Drug Administration (SFDA) and produced by pharmaceutical companies with good manufacture practices; b) herbal formulae prescribed by Chinese medicine practitioners based on a Chinese medicine diagnosis (i.e. pattern differentiation of symptoms). This type of medicine was usually cooked as decoction by the patients themselves or prepared by a hospital pharmacy. As we predicted great variation in the type, timing, dosage and administration of herbs and their combination with other interventions, we did not limit any of these aspects.

The control intervention could be no treatment, placebo or conventional pharmaceutical medicine (such as hormone replacement therapy, bisphosphonate, calcitonin, calcium and vitamin D), as well as non-pharmaceutical interventions such as exercise. Co-intervention was allowed as long as all groups from the randomised allocation received the same co-intervention.
We excluded studies in which the duration of herbal treatment was less than three months.

Types of outcome measures

Major outcomes

Major outcome measures sought at the end of treatment or at maximal follow-up:

1. Number of individuals with fractures and type of fractures (lumbar spine, radius, femoral neck).
2. Quality of life or symptoms including pain, muscle fatigue and limited mobility.
3. Death directly or indirectly attributed to osteoporosis.
4. Adverse effects including serious adverse events and withdrawals: serious adverse events are defined as any untoward medical occurrence that resulted in death or fracture, was life-threatening, resulted in persistent or significant disability, or any important medical event which may have jeopardised the patient or required intervention to prevent it (ICH GCP 1997). All other adverse effects were considered non-serious. We recorded reports of adverse effects associated with the herbs used in the treatment of osteoporosis from any type of study in order to evaluate harms.

Minor outcomes

Minor outcomes at the end of treatment or at maximal follow-up:

1. Bone mineral density (BMD).
2. Biochemical indicators: serum calcium (Ca), phosphorus (P), alkaline phosphatase (ALP), oestradiol (E2), parathyroid hormone (PTH), calcitonin (CT), bone Gla protein (BGP), interleukin-6 (IL-6).

Search methods for identification of studies

Electronic searches

We searched the following electronic databases irrespective of language or publication status: the Cochrane Central Register of Controlled Trials (CENTRAL) in *The Cochrane Library* (2012, Issue 12), MEDLINE, EMBASE, LILACS, JICST-E (Japan Information Center for Science and Technology), AMED, the database of the Cochrane Complementary Medicine Field, Chinese Biomedical Database (CBM), CINAHL (Cumulative Index to Nursing and Allied Health Literature) and the Chinese Academic Conference Papers Database.
We used the following MeSH and free-text terms: osteoporosis, medicine-Chinese-traditional, plants-medicinal, drugs-Chinese-herbal, plants extracts and herbs. The full search strategies were in Appendix 1 (MEDLINE), Appendix 2 (EMBASE), Appendix 3 (CENTRAL) and Appendix 4 (CBM). All electronic searches were from inception to 9 January 2013.

Searching other resources

We handsearched the following journals published in Chinese: *Chinese Journal of Integrated Traditional and Western Medicine* (1981 to 2012), *Chinese Journal of Osteoporosis* (1995 to 2012), *Chinese Journal of Geriatrics* (1982 to 2012) and *Journal of Clinical Orthopaedics* (1998 to 2012).
We screened reference lists of all retrieved articles and reviews for possible eligible trials.

Data collection and analysis

Selection of studies

Two authors (Y Liu, Y Xia) independently selected the trials to be included in the review according to the prespecified selection criteria. Any disagreement was resolved by discussion.

Data extraction and management

Two authors (Y Liu, Y Xia) extracted data independently using a self developed data extraction form which was piloted for formal use. Disagreement was resolved by discussion.
We extracted the following characteristics and data from each included trial: primary author, study setting, methodology, mean age, gender and ethnicity of patients, number of randomised patients, reasons and number of patients who dropped out or were lost during the follow-up, patient inclusion and exclusion criteria, symptoms of the patients, diagnostic criteria, type of herb or herbs, route of administration, dosage and duration of the herb, details of comparison regime, outcome measures (end of treatment and follow-up), and number and type of adverse effects.
If the above data were not available in the trial reports, we sought further information by correspondence with the principal author. If the information was still lacking after the author was contacted, we recorded the last reported observed response.

Assessment of risk of bias in included studies

Based on the recommendations in the *Cochrane Handbook for Systematic Reviews of Interventions* (Chapter 8: Assessing risk of bias in included studies), we made separate critical assessments for

seven specific domains: sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting and 'other' issues (the baseline comparability between groups) (Higgins 2011). Two authors (Y Liu, Y Xia) assessed the risk of bias independently and assigned a judgement of 'low' risk of bias, 'high' risk of bias or 'unclear' risk of bias. Any disagreement was resolved by discussion.

Measures of treatment effect

We presented dichotomous data as risk ratio (RR) and continuous outcomes as mean difference (MD), both with 95% confidence intervals (CI).

Unit of analysis issues

For a trial with multiple treatment groups, in order to overcome a unit of analysis error, we selected the following approaches accordingly.

- Combining groups of the same Chinese herbal medicine with different dosages to create a single pair-wise comparison.
- Selecting one pair of interventions and excluding the others.
- Splitting the 'shared' group into two or more groups with smaller sample size, and including two or more (reasonably independent) comparisons.

Dealing with missing data

Based on the recommendations in the*Cochrane Handbook for Systematic Reviews of Interventions* (Chapter 16.1: Missing data), we used two options for dealing with missing data (Higgins 2011).

- Analysing only the available data when data were assumed to be missing at random (i.e. ignoring the missing data).
- Imputing the missing data with replacement values (such as a poor outcome) when data were not assumed to be missing at random.

Assessment of heterogeneity

We assessed heterogeneity using the I^2 statistic, which describes the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) (Higgins 2011). A rough guide to interpretation of I^2 is as follows:

- 0% to 40%: might not be important;
- 30% to 60%: may represent moderate heterogeneity;
- 50% to 90%: may represent substantial heterogeneity;
- 75% to 100%: considerable heterogeneity.

Assessment of reporting biases

We planned to detect reporting biases with funnel plots, which is a simple scatter plot of the intervention effect estimates from individual studies against some measure of each study's size or precision (Higgins 2011).

Data synthesis

We compared types of Chinese herbal medicines with each control (such as placebo) regardless of the treatment regimen. We performed meta-analysis within comparisons of the same herb versus the similar control intervention. Whenever there was significant heterogeneity ($I^2 > 50\%$), we used the random-effects model; otherwise we reported fixed-effect models (Altman 2003). We carried out the statistical analyses using Review Manager 5.2 (Cochrane software) (RevMan 2012).

We tabulated the following comparisons when data were available:

- Chinese herbal medicines versus no intervention or placebo;
- Chinese herbal medicines versus conventional medicine (such as hormone replacement therapy, bisphosphonate);
- Chinese herbal medicines versus non-pharmaceutical intervention.

We presented trials of herbs plus active intervention versus active intervention alone as a separate comparison.

Subgroup analysis and investigation of heterogeneity

We performed subgroup analyses on different Chinese herbal medicines and on body parts of participants for BMD measurement. However, due to the limited number of randomised trials for individual Chinese herbal medicines, the following subgroup analyses were not performed: duration of the herbal treatment, types of osteoporosis (for example, senile or postmenopausal osteoporosis) and severity of osteoporosis.

Sensitivity analysis

Similarly, due to the heterogeneity of the interventions, we were unable to pool results into a meta-analysis and therefore could not undertake a sensitivity analysis to explore the influence of trial methodological quality on effect estimates.

'Summary of findings' tables

We created 'Summary of findings' tables for different comparisons and included the following patient-important outcomes (fractures, quality of life, death, serious adverse events, BMD). We assessed the overall quality of the evidence by outcome using the GRADE approach and incorporated this in the tables.

RESULTS

Description of studies

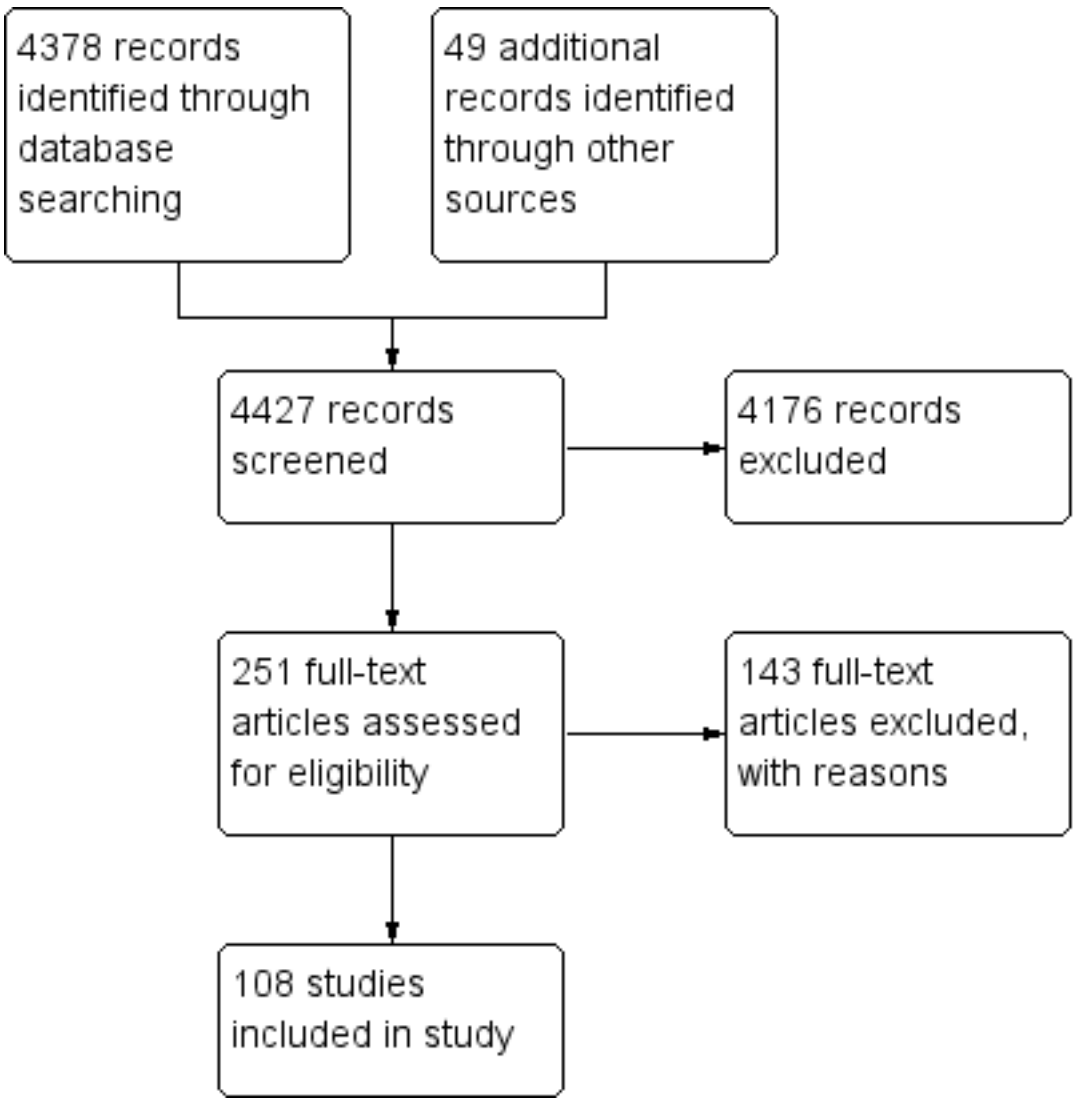
Results of the search

Our initial searches identified 4427 references: 4378 from electronic searches and 49 from handsearches. After reading titles and abstracts, 4176 of these articles were excluded because they were duplicates, non-clinical studies, without a control group, traditional reviews, animal studies, case reports or had study objectives different from this review. We retrieved a total of 251 references published in Chinese or English for further assessment. Of these, 143 references were excluded because they did not meet our inclusion criteria. Reasons for exclusion were shown in the Characteristics of excluded studies table.

In this review, 108 randomised clinical trials met the inclusion criteria. All trials were conducted in China between 1996 and 2012. We did not find any cohort studies for the evaluation of the safety of Chinese herbal medicines for osteoporosis. The included studies reported random allocation of patients with osteoporosis to Chinese herbal medicines versus control (placebo in three trials, no treatment in five trials, conventional pharmaceutical medicine (such as calcium and vitamin D, calcium gluconate, tibolone tablets, nilestriol, calcitonin, alendronate, calcium, vitamin D, etc.) in 61 trials, Chinese herbal medicines plus co-intervention versus the same co-intervention in 47 trials). No trial compared Chinese herbal medicines with non-pharmaceutical interventions. Eighteen trials (An SJ 2000; Chen ZX 2002; Dai Y 2007; Gong L 2001; Liao L 2004; Miu JQ 2008; Peng T 2002; Ruan XY 2006; Song XW 2000; Wang XY 2000; Wu MS 2007; Xiong YH 2008; Xu H 2010; Xu M 2009; Zhan HS 2009; Zhang YS 2003; Zhang YP 2007; Zhu HM 2012) had more than two arms. Attributes of the 108 included studies are shown in the Characteristics of included studies table. Four trials were published in English (Deng WM 2012; Qiu RB 2004; Xie J 2004; Zhu HM 2012) and 104 studies were published in Chinese.

The study flow diagram is shown in Figure 1.

Figure 1. The study screening flow diagram.



Included studies

Participants

A total of 10,655 patients with osteoporosis were randomised in the 108 trials, among which 65 trials included postmenopausal osteoporosis patients, eight trials included senile osteoporosis patients and 35 trials included primary osteoporosis patients unspecified as to life-stage or co-morbidity. The race/ethnicity of all patients studied was Chinese in all 108 trials. One hundred and five randomised clinical trials included adults with a mean age of 61.3 years. Three trials did not report data on gender or age or both (Lin W 2000; Xiong YH 2008; Zhao LN 2003). The average number of participants in the trials was 98, ranging from 20 to 600 patients per trial.

Diagnosis

Among the 108 included trials, the diagnostic criteria for osteoporosis in 18 trials were based on WHO criteria (An SJ 2000; Cao W 2010; Chen NQ 2006; Chen ZX 2002; Cui TH 1999; Dai Y 2007; Gang PH 2001; Hu J 2012; Li HW 2004; Li YH 2008; Miu JQ 2008; Wang SW 2003; Ye AN 1998; Zhang RH

2004; Zhang YL 1996; Zhao G 2002; Zheng WK 2007; Zhou LZ 2001), and in the others the Chinese diagnostic criteria for osteoporosis were used. BMD was detected by dual energy X-ray absorptiometry (DXA), single photon absorptiometry (SPA) or CUBA ultrasound bone densitometer in all of the studies.

Interventions

Ninety-nine different Chinese herbal medicines were tested in 108 randomised trials. Only eight Chinese herbal medicines were tested twice or more, including Kanggusong granule in two trials (An SJ 2000; Wu MS 2001), Bushen Qiangshen pill in two trials (Mu G 2001; Mu G 2001a), Migu tablets in two trials (Dai Y 2007; Xie J 2004), Gukang oral liquid in three trials (Chen JP 1999; Shao M 2003; Wang JM 2008), Gushukang granule in three trials (Chen ZX 2002; Wu MS 2007; Zhang YS 2003), Qianggu capsule in three trials (Ruan XY 2006; Wang J 2007; Xu H 2010), Liuwei Dihuang pills in two trials (Ma C 2011; Zhang J 2003) and Xianlinggubao capsule in seven trials (Dai Y 2007; Dong Y 2010; Qiu ZX 2010; Wu W 2005; Xu M 2009; Zhang XZ 2004; Zhu HM 2012). However, even when the same Chinese herbal medicines were tested, the control interventions were different for each trial. Therefore, there was no trial which tested exactly the same Chinese herbal medicine and the same control in this review. Seven trials tested two or more different Chinese herbal medicines respectively (Dai Y 2007; Gong L 2001; Wu MS 2007; Xiong YH 2008; Zhan HS 2009; Zhang YS 2003; Zhang ZF 2011). According to the categories of medicinal herbs, two trials tested single herbs (Yang B 2007; Zhao LN 2003) and the remaining trials tested compounds of multiple herbs. Based on our standard classification for Chinese herbal medicines, 45 trials tested Chinese proprietary medicine and the others tested prescribed herbal formulae. The composition and treatment regimens of the Chinese herbal medicines varied (see Table 1: 'The preparation and composition of the Chinese herbal medicines in the included trials'). The median duration of treatment was 5.7 months (ranging from 3 to 12 months).

The control interventions included placebo in three trials and no treatment in five trials. In the other trials the control interventions were conventional pharmaceutical medicine or Chinese herbal medicines plus co-intervention versus the same co-intervention.

The interventions in the included trials are described in the Characteristics of included studies table.

Outcomes

Seven trials reported fracture incidence (An SJ 2000; Deng WM 2012; Li ZP 2011; Zhang RH 2004; Zhang ZF 2011; Zhao HX 2001; Zhu HM 2012). None of the 108 trials reported death directly or indirectly caused by osteoporosis. The outcomes reported were mainly surrogate outcomes, including BMD, biochemical indicators (serum calcium, phosphorus, alkaline phosphatase, oestradiol, parathyroid hormone, calcitonin, bone Gla protein, interleukin-6, etc.), the improvement of lumbago and backache, and adverse effects. Only two trials reported quality of life and medical expenses (Liang DB 2012; Zhang ZF 2011). Adverse effects were reported in 44 trials and included nausea, diarrhoea, dry mouth, constipation, tiredness, dental ulcer, epigastric discomfort, breast pain, dizziness, stomach discomfort, etc. All the reported outcomes were measured at the end of treatment.

Risk of bias in included studies

In this review, all 108 trials were reported as parallel-group randomised trials and three trials were multicentre randomised trials (Deng WM 2012; Xiong YH 2008; Zhu HM 2012). Of the 108, only 27 reported the methods used for the generation of the allocation sequence. Among them, four used random numbers generated by a computer or calculator (Xu YL 2007; Zhang RH 2004; Zhao HX 2001; Zhu HM 2012), 20 used a random numbers table (Chen XL 2010; Chen ZX 2002; Dai Y 2007; He N 2006; Hu J 2012; Li BL 2007; Li HW 2004; Li YH 2008; Ma C 2011; Qiu RB 2008; Wang CC 2005; Wu MS 2007; Wu W 2005; Xiong YH 2008; Xu H 2010; Xu M 2009; Zhang DS 2011; Zhang XZ 2004; Zhao G 2002; Zhu HJ 2011) and one used random drawings (Wang ZK 2004).

Only one trial (Zhu HM 2012) provided information about allocation concealment.

Double-blinding was reported in 10 trials (An SJ 2000; Lin W 2000; Wang SW 2003; Wang XD 2011; Xiong YH 2008; Zhan HS 2009; Zhao HX 2001; Zhao LN 2003; Zheng WK 2007; Zhu HM 2012). Eight trials reported use of single-blinding (Chen JP 1999; Chen NQ 2006; Mao YF 2011; Wang XY 2000; Xie YM 1997; Yuan YN 2000; Zhou ZK 2006; Zou JJ 2005).

Two trials (Deng WM 2012; Zhu HM 2012) reported a pre-trial estimation of sample size and reported performing intention-to-treat analysis. Nineteen trials reported withdrawals (Deng WM 2012; He MT 2007; Li SL 2004; Li YH 2010; Ma C 2011; Meng XD 2003; Peng T 2002; Ruan XY 2006; Wang CC 2005; Wang JM 2008; Xiong YH 2008; Xu YL 2007; Zhan HS 2009; Zhang XJ 2008; Zhang RH 2004; Zhang ZF 2011; Zhao HX 2001; Zheng WK 2007; Zhu HM 2012).

None of the 108 trials reported all outcomes of interest in this review.

Seventy trials appeared to be free of other sources of bias, while the 38 other trials did not report the baseline comparability between groups in detail.

The risk of bias in the included studies is shown in detail in Figure 2 and Figure 3.

Figure 2. 'Risk of bias' graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

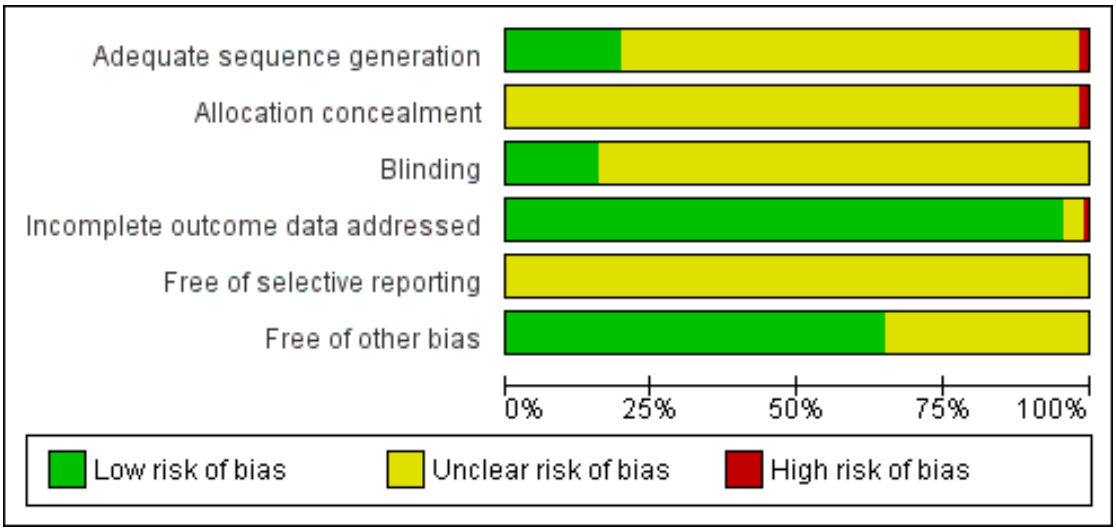
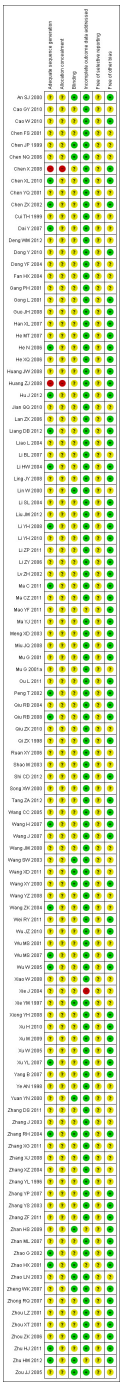


Figure 3. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study.



The poor availability of information about study design meant that we rated most items as having unclear risk of bias. Based on The Cochrane Collaboration's recommended summary assessments for risk of bias (Higgins 2011), the 'Risk of bias' assessment should be for the important outcomes, therefore for the outcome of fracture we evaluated the risk of bias as 'unclear' for sequence generation, allocation concealment, blinding and selective outcome reporting in those seven studies that reported it (Figure 3).

Assessment of reporting biases

Due to the small number of trials testing the same intervention and same outcome, a meaningful funnel plot analysis could not be conducted.

Effects of interventions

See: **Summary of findings for the main comparison** Chinese herbal medicines versus placebo for osteoporosis; **Summary of findings 2** Chinese herbal medicines versus no intervention for osteoporosis; **Summary of findings 3** Chinese herbal medicines versus western medicine for osteoporosis; **Summary of findings 4** Chinese herbal medicines plus western medicine versus western medicine for osteoporosis

Chinese herbal medicines versus placebo (Comparison 01)

Three trials (involving 219 patients) compared the effects of Chinese herbal medicines with placebo (Lin W 2000; Wang XY 2000; Zhao HX 2001). Based on our standard classification for Chinese herbal medicines, the tested Chinese herbal medicines included two prescribed herbal formulae (Migu decoction and Bushen Yigu soft extract), and one Chinese proprietary medicine (Kanggusong capsules). The reported outcomes included BMD of the lumbar spine, radius and ulna, and the levels of oestradiol (E2). We were not able to pool the data due to the heterogeneity of the Chinese herbal medicines that were studied.

Based on the included trials, we created a 'Summary of findings' table for patient-important outcomes (fractures, quality of life, death, serious adverse events, BMD) (see Summary of findings for the main comparison).

Fractures

In three trials of Chinese herbal medicines versus placebo, one trial reported new compression fractures of the backbone in the placebo group (0/50 versus 10/54) (RR 0.05; 95% CI 0.00 to 0.85) (Analysis 1.1) (Zhao HX 2001).

Quality of life or symptoms including pain, muscle fatigue and limited mobility

No trials reported quality of life.

One trial reported improvement in bone pain in the group treated with Chinese herbal medicines compared to placebo (49/50 versus 44/54) (RR 1.20; 95% CI 1.05 to 1.37) (Analysis 1.4) (Zhao HX 2001).

Death

No trials reported this outcome.

Adverse effects

In three trials of Chinese herbal medicines versus placebo, one trial reported some mild adverse effects in the Chinese herbal medicines group, including stomach/intestinal upset, headache and dizziness (Zhao HX 2001). Two trials did not report on adverse effects (Lin W 2000; Wang XY 2000).

Bone mineral density (BMD)

BMD of the lumbar spine

Compared with placebo, the group treated with Migu decoction showed a statistically significant increase in BMD of the lumbar spine after four months treatment (MD 0.16 g/cm^3; 95% CI 0.06 to 0.26) (Analysis 1.2) (Lin W 2000). The group treated with Kanggusong capsules had a statistically significant increase in BMD when compared to the placebo group after 12 months treatment (MD 0.06 g/cm^3; 95% CI 0.02 to 0.10) (Analysis 1.2) (Zhao HX 2001).

BMD of the radius

The group treated with Bushen Yigu soft extract showed a statistically significant increase in BMD of the radius compared to a group treated with placebo after three months treatment (MD 0.06 g/cm^3; 95% CI 0.03 to 0.09) (Analysis 1.2) (Wang XY 2000).

BMD of the ulna

Those treated with Bushen Yigu soft extract showed a statistically significant increase in BMD of the ulna when compared to a placebo group after three months treatment (MD 0.06 g/cm^3; 95% CI 0.02 to 0.10) (Analysis 1.2) (Wang XY 2000).

Biochemical indicators

The effects of the interventions on biochemical indicators are shown in Appendix 5.

Summary: Comparison 01

In summary, compared with placebo, Migu decoction and Kanggusong capsule seemed to improve the BMD of the lumbar spine; Bushen Yigu soft extract improved the BMD of the radius and the ulna.

Chinese herbal medicines versus no intervention (Comparison 02)

Five trials (involving 628 patients) compared seven different Chinese herbal medicines with no intervention (Gong L 2001; Liao L 2004; Peng T 2002; Zhang YP 2007; Zhang YS 2003). Two trials with two arms compared different herbs with no intervention (Gong L 2001; Zhang YS 2003). The tested herbs included Yishen Zhuanggu mixture, Shengu capsule, Bushen Shengsui principle, Qianggu soft extract, Huoluo Gukang pills, Shigu yin and Gushukang granule. Based on our standard classification for Chinese herbal medicines, five herbs were Chinese proprietary medicine, and two were prescribed herbal formulae. The reported outcomes included BMD of the lumbar spine and femoral neck, and the levels of oestradiol (E2) and osteocalcin, also known as bone Gla protein (BGP), but we were not able to pool the data due to the heterogeneity of the Chinese herbal medicines that were studied.

Based on the included trials, we created a 'Summary of findings' table for patient-important outcomes (fractures, quality of life, death, serious adverse events, BMD) (see Summary of findings 2).

Fractures

None of the five trials reported the outcome fractures.

Quality of life or symptoms including pain, muscle fatigue and limited mobility

None of the five trials reported these outcomes.

Death

None of the five trials reported this outcome.

Adverse effects

Four trials reported some mild adverse effects, such as mild stomach discomfort, intestinal upset or constipation, but this did not affect the continuation of treatment (Gong L 2001; Peng T 2002; Zhang YS 2003; Zhang YP 2007). One trial reported no adverse effects (Liao L 2004).

Bone mineral density (BMD)

BMD of lumbar spine

Compared with no intervention, treatment with Bushen Shengsui principle showed no evidence of effect after six months treatment (MD 0.07 g/cm^3; 95% CI -0.06 to 0.20) (Analysis 2.1) (Liao L 2004).

BMD of femoral neck

Compared with no intervention, treatment with Bushen Shengsui principle did not increase the BMD of the femoral neck after six months (MD 0.10 g/cm^3; 95% CI 0.00 to 0.20) (Analysis 2.1) (Liao L 2004), and nor did treatment with Yishen Zhuanggu mixture after six months (MD 0.05 g/cm^3; 95% CI -0.01 to 0.11) (Analysis 2.1) (Gong L 2001) or Shengu capsule (MD 0.02 g/cm^3; 95% CI -0.06 to 0.09) (Analysis 2.1) (Gong L 2001). Treatment with Qianggu soft extract resulted in a statistically significant increase in the BMD of the femoral neck after six months treatment (MD 0.09 g/cm^3; 95% CI 0.03 to 0.15) (Analysis 2.1) (Peng T 2002), as did Shigu yin after six months treatment (MD 0.08 g/cm^3; 95% CI 0.03 to 0.13) (Analysis 2.1) (Zhang YP 2007).

Biochemical indicators

The effects of the interventions on biochemical indicators are shown in Appendix 5.

Summary: Comparison 02

In summary, compared with no intervention, Qianggu soft extract appeared to improve the BMD of the femoral neck significantly. Shigu yin also seemed to improve the BMD of the femoral neck. However, some groups treated with Chinese herbal medicines showed no significant difference from those receiving no intervention, including Bushen Shengsui principle (BMD of the lumbar spine and femoral neck), Yishen Zhuanggu mixture (BMD of the femoral neck) and Shengu capsule (BMD of the femoral neck) after six months of treatment.

Chinese herbal medicines versus western medicine (Comparison 03)

Sixty-one trials (involving 4805 patients) compared 56 different Chinese herbal medicines with western medicine (An SJ 2000; Chen JP 1999; Chen NQ 2006; Chen X 2008; Chen ZX 2002; Cui TH 1999; Dong YF 2004; Gang PH 2001; He MT 2007; He N 2006; Huang ZJ 2008; Lan ZX 2006; Li BL 2007; Li YH 2008; Li YH 2010; Li ZY 2006; Liao L 2004; Ling JY 2008; Lv ZH 2002; Ma C 2011; Mao YF 2011; Meng XD 2003; Mu G 2001a; Ou L 2011; Peng T 2002; Qi ZX 1998; Qiu RB 2004; Qiu RB 2008; Ruan XY 2006; Shao M 2003; Shi CD 2012; Song XW 2000; Wang CC 2005; Wang H 2007; Wang J 2007; Wang

JM 2008; Wang XY 2000; Wang YZ 2008; Wang ZK 2004; Wei RY 2011; Wu JZ 2010; Wu MS 2001; Wu MS 2007; Xie YM 1997; Xu H 2010; Xu M 2009; Xu W 2005; Xu YL 2007; Yang B 2007; Yuan YN 2000; Zhan ML 2007; Zhang XG 2011; Zhang YP 2007; Zhang J 2003; Zhang XJ 2008; Zhang YL 1996; Zhao LN 2003; Zhong RQ 2007; Zhou LZ 2001; Zhou ZK 2006; Zhu HJ 2011). Among them, two trials compared herbs with two different Western pharmaceutical medicines (An SJ 2000; Song XW 2000). One trial (Wu MS 2007) compared two herbs with western medicine.

The tested herbal preparations included Acupoint sticking of Migudan, Bugu Shengsui capsule, Bushen Huoxue capsules, Bushen Jianpi Huoxue recipe, Bushen Jianpi Jingu decoction, Bushen Jianpi Migu prescription, Bushen Qianggutang, Bushen Qiangshen pill, Bushen Tianjing Huoxue therapy, Bushen Shengsui principle, Bushen Yangxue tang, Bushen Yigu soft extract, Bushen Zhuanggu tang, Bushenjianpi Zhuangguyin, Erxian soup, Gujian capsule, Gukang decoction, Gukang oral liquid, Guli powder, Gumikang capsule, Gumiling granule, Gushen Yijing tang, Gushukang granule, Huangqi, Huangqi Sanxian tang, Jiangu capsule, Jiangu recipe, Jianshenfang granule, Jiawei Bushen Zhuangjintang, Jiawei Zhuangyao Jianshen tang, Jingujian granule, Jingujian granule (1,2,3), Kanggusong capsule, Kanggusong granule, Kangshu Jiangu granule, kidney-tonifying herbs, Liuwei Dihuang pills, prescription for tonifying kidney, Qianggu capsule, Qianggu paste, Qianggu soft extract, Radix rehmanniae preparata and Radix astragali, Shangke Jiegu tablet, Shenyao capsules, Shigu yin, Strong Bone capsule, TPF capsule, Tongbu Qianggutang, urinary bladder (Kidney) meridian sticking, Xianling Gusong capsules, Xianlinggubao capsule, Yanghuo Sanzi tang, Yinyanghuo, Herba epimedii prescription (including Herba epimedii, Fructus psoraleae, Cortex eucommiae, Concha ostreae, Radix aconiti preparata, Radix aconiti kusnezoffii, Radix angelicae sinensis and Rhizome chuanxiong), Yishen Yanggan mixture and Zishen Gukang pill. All these herbal preparations except Yinyanghuo and Huangqi (Radix Astragali) are mixtures of herbs. Based on our standard classification for Chinese herbal medicines, 22 herbs were Chinese proprietary medicine, and 34 were prescribed herbal formulae.

The reported outcomes included BMD of the lumbar spine, radius, ulna, femoral neck, Ward's triangle, trochanter, hipbone, distal radius and calcaneus. Levels of oestradiol (E2), serum calcium (Ca), phosphorus (P), alkaline phosphatase (ALP), bone Gla protein (BGP), interleukin-6 (IL-6), parathyroid hormone (PTH) and calcitonin (CT) were also measured, as was the improvement of lumbago and backache.

We were not able to pool the data due to the variations in the herbal preparations and control interventions that were used in the studies.

Based on the included trials, we created a 'Summary of findings' table for patient-important outcomes (fractures, quality of life, death, serious adverse events, BMD) (see Summary of findings 3).

Fractures

Of the 61 trials, one trial reported that no new fracture occurred (An SJ 2000).

Quality of life or symptoms including pain, muscle fatigue and limited mobility

No trials reported the outcome of quality of life.

Twenty trials out of 61 reported the improvement of lumbago and backache. Among these 20 trials, eight reported that Chinese herbal medicines were better than western medicines without reporting the number of cases with ache improvement in each group (Chen NQ 2006; Dong YF 2004; Ou L 2011; Qi ZX 1998; Wang ZK 2004; Xie YM 1997; Xu H 2010; Zhang XJ 2008). The other 12 trials reported as follows:

- 46/48 versus 24/42: RR 1.68; 95% CI 1.28 to 2.19 (Analysis 3.4) (Lv ZH 2002);
- 76/78 versus 11/21: RR 1.86; 95% CI 1.24 to 2.80 (Analysis 3.4) (Peng T 2002);
- 24/30 versus 15/30: RR 1.60; 95% CI 1.07 to 2.39 (Analysis 3.4) (Wu MS 2001);
- 53/60 versus 26/50: RR 1.70; 95% CI 1.28 to 2.25 (Analysis 3.4) (Xu W 2005);
- 13/15 versus 9/10: RR 0.96; 95% CI 0.72 to 1.28 (Analysis 3.4) (Zhao LN 2003);
- 15/15 versus 2/10: RR 4.26; 95% CI 1.43 to 12.72 (Analysis 3.4) (Gang PH 2001);
- 25/29 versus 20/29: RR 1.25; 95% CI 0.94 to 1.66 (Analysis 3.4) (He N 2006);
- 28/30 versus 22/30: RR 1.27; 95% CI 1.01 to 1.61 (Analysis 3.4) (Huang ZJ 2008);
- 52/60 versus 11/40: RR 3.15; 95% CI 1.89 to 5.26 (Analysis 3.4) (Li YH 2008);
- 18/21 versus 12/22: RR 1.57; 95% CI 1.03 to 2.39 (Analysis 3.4) (Li ZY 2006);
- 43/48 versus 19/32: RR 1.51; 95% CI 1.12 to 2.04 (Analysis 3.4) (Wei RY 2011);
- 56/60 versus 34/60: RR 1.65; 95% CI 1.31 to 2.08 (Analysis 3.4) (Qiu RB 2008).

Death

No trials reported this outcome.

Adverse effects

Twenty-three trials out of 61 reported adverse effects. These included:

- two patients with midsection discomfort in the herbal group (Cui TH 1999);
- a few patients with dizziness, rash, nausea, vomiting and cardiopalmus at the beginning of therapy, but no significant difference in comparison groups (Dong Y 2010);

- 11 patients with dry mouth symptoms, five with stomach discomfort, two with constipation and one with cardiopalmus in the herbal group, and nine patients with stomach discomfort and one with constipation in the western medicine group (Li YH 2010);
- three patients with spotting vaginal bleeding at the beginning of treatment, which did not affect observation, and five cases with breast pain who withdrew from the western medicine group (Liao L 2004);
- six patients with constipation and five with dry mouth symptoms in the herbal group, which did not affect observation (Meng XD 2003);
- two patients with abdominal distention and sour regurgitation in the herbal group, and three with gastrointestinal symptoms in the western medicine group (Ma C 2011);
- three patients in the herbal group and one in the western medicine group with stomach discomfort (Peng T 2002);
- one patient with stomach discomfort in the western medicine group (Wang CC 2005);
- five patients with stomach discomfort in the herbal group and two in the western medicine group (Wang H 2007);
- two patients with mild constipation and one with dry mouth symptoms in the herbal group (Wang J 2007);
- a few patients with nausea, stomach ache and dizziness in the western medicine group (Wu MS 2001);
- two patients with dry and hard stools during treatment in the herbal group (Xie YM 1997);
- five patients with nausea in the herbal group and three in the western medicine group (Xu H 2010);
- two patients with nausea in the herbal group and three in the western medicine group (Xu M 2009);
- three patients with gastrointestinal reactions in the western medicine group (Chen X 2008);
- one patient with palpitations, two patients with constipation and four patients with stomach discomfort in the Jingujian granule group, and five patients with constipation and two patients with abdominal distention in the western medicine group (Li YH 2008); and
- one trial (Zhang YP 2007) which reported patients with constipation in the control group without reporting data.

Six trials reported no adverse effects (Chen NQ 2006; Gang PH 2001; Xu YL 2007; Yuan YN 2000; Zhang XJ 2008; Zhou LZ 2001).

Most of the adverse effects did not affect continuation of treatment. Thirty-eight trials did not report adverse effects.

Bone mineral density (BMD)

BMD of the lumbar spine

No significant difference between groups in the BMD of the lumbar spine was reported for any of the following comparisons of treatment groups:

- Kanggusong granule versus ipriflavone plus Caltrate (MD 0.00 g/cm^3; 95% CI -0.05 to 0.05), Kanggusong granule versus Caltrate after nine months treatment (MD 0.04 g/cm^3; 95% CI -0.02 to 0.10) (Analysis 3.2) (An SJ 2000);
- Strong Bone capsule versus Caltrate after three months treatment (MD -0.01 g/cm^3; 95% CI -0.08 to 0.06) (Analysis 3.2) (Cui TH 1999);
- Herba epimedii prescription versus vitamin D plus Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI 0.00 to 0.06) (Analysis 3.2) (Dong YF 2004);
- Bushen Shengsui principle versus conjugated oestrogens plus medroxyprogesterone after six months treatment (MD 0.00 g/cm^3; 95% CI -0.12 to 0.12) (Analysis 3.2) (Liao L 2004);
- Bushen Jianpi Jingu decoction versus calcitonin after three months treatment (MD 0.02 g/cm^3; 95% CI -0.09 to 0.13) (Analysis 3.2) (Mao YF 2011);
- Gukang oral liquid versus alendronate after six months treatment (MD 0.01 g/cm^3; 95% CI -0.03 to 0.05) (Analysis 3.2) (Shao M 2003);
- kidney-tonifying herbs versus nilestriol (MD -0.02 g/cm^3; 95% CI -0.09 to 0.05), kidney-tonifying herbs versus calcium (MD 0.02 g/cm^3; 95% CI -0.04 to 0.08) after six months treatment (Analysis 3.2) (Song XW 2000);
- Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (MD 0.02 g/cm^3; 95% CI -0.01 to 0.05) after six months treatment (Analysis 3.2) (He MT 2007);
- Huangqi Sanxian tang versus nilestriol after three months treatment (MD 0.00 g/cm^3; 95% CI -0.03 to 0.04) (Analysis 3.2) (Zhou ZK 2006);
- Qianggu capsule versus active vitamin D3 after six months treatment (MD 0.04 g/cm^3; 95% CI -0.01 to 0.09) (Analysis 3.2) (Wang J 2007);
- Jianshenfang granule versus alendronate sodium after six months treatment (MD 0.09 g/cm^3; 95% CI -0.03 to 0.21) (Analysis 3.2) (Li BL 2007);
- Jiangu recipe versus alendronate sodium after 12 months treatment (MD 0.02 g/cm^3; 95% CI 0.00 to 0.04) (Analysis 3.2) (Qiu RB 2008);
- Gukang fang versus alendronate sodium tablets after four months treatment (MD 0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 3.2) (Chen X 2008);
- Qianggu capsule versus alendronate (MD 0.01 g/cm^3; 95% CI -0.04 to 0.05) after six months treatment (Analysis 3.2) (Xu H 2010);
- Bushen Huoxue capsules versus Caltrate and calcitonin (MD 0.02 g/cm^3; 95% CI -0.05 to 0.09) after 12 months treatment (Analysis 3.2) (Zhang XJ 2008);
- Yinyanghuo versus conjugated oestrogens (MD 0.03 g/cm^3; 95% CI -0.04 to 0.10) after six months treatment (Analysis

3.2) (Zhao LN 2003);

- Shenyao capsules versus Caltrate (MD 0.00 g/cm^3; 95% CI -0.05 to 0.05) after six months treatment (Analysis 3.2) (Chen NQ 2006);
- Guli powder versus Caltrate after three months treatment (male: MD 0.02 g/cm^3; 95% CI -0.01 to 0.05; female: MD 0.04 g/cm^3; 95% CI -0.07 to 0.15) (Analysis 3.2) (Lan ZX 2006);
- Gushen Yijing tang versus Caltrate after six months treatment (MD 0.06 g/cm^3; 95% CI -0.02 to 0.14) (Analysis 3.2) (Zhong RQ 2007);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet after six months treatment (MD 0.12 g/cm^3; 95% CI -0.01 to 0.26) (Analysis 3.2) (Xie YM 1997);
- Xianling Gusong capsules versus Caltrate after six months treatment (MD -0.03 g/cm^3; 95% CI -0.08 to 0.02) (Analysis 3.2) (Li ZY 2006);
- Zishen Gukang pill versus Caltrate plus vitamin D after three months treatment (MD -0.00 g/cm^3; 95% CI -0.05 to 0.04) (Analysis 3.2) (Huang ZJ 2008);
- Gukang decoction versus alendronate sodium tablets after four months treatment (MD -0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 3.2) (Chen X 2008);
- Gumiling granule versus chewable bicarbonate calcium after six months treatment (MD 0.04 g/cm^3; 95% CI -0.02 to 0.09) (Analysis 3.2) (Gang PH 2001);
- Gujian capsule versus alfacalcidol after three months treatment (MD 0.08 g/cm^3; 95% CI -0.02 to 0.18) (Analysis 3.2) (Meng XD 2003);
- Xianlinggubao capsule versus alendronate after six months treatment (MD 0.00 g/cm^3; 95% CI -0.02 to 0.02) (Analysis 3.2) (Xu M 2009);
- Bushen Tianjing Huoxue therapy versus Caltrate and calcitriol soft capsule after six months treatment (MD 0.04 g/cm^3; 95% CI 0.00 to 0.07) (Analysis 3.2) (Zhu HJ 2011).

In 13 trials Chinese herbal medicines were reported to have statistically significant better effects on the BMD of the lumbar spine when compared with western medicine (calcium supplementation, vitamin D, hormones or different combinations):

- Jiawei Bushen Zhuangjintang versus calcium granules after three months treatment (MD 0.10 g/cm^3; 95% CI 0.05 to 0.15) (Analysis 3.2) (Lv ZH 2002);
- Yishen Yanggan mixture versus calcium gluconate after three months treatment (MD 0.04 g/cm^3; 95% CI 0.01 to 0.07) (Analysis 3.2) (Xu W 2005);
- Kanggusong granule versus Caltrate after six months treatment (MD 0.06 g/cm^3; 95% CI 0.02 to 0.11) (Analysis 3.2) (Wei RY 2011);
- Bushen Qianggutang versus Caltrate after three months treatment (MD 0.09 g/cm^3; 95% CI 0.01 to 0.17) (Analysis 3.2) (Qi ZX 1998);
- Bushen Jianpi Migu prescription versus Caltrate after three months treatment (MD 0.06 g/cm^3; 95% CI 0.03 to 0.09) (Analysis 3.2) (Wang ZK 2004);
- Bushen Zhuanggu tang versus alendronate sodium tablets after three months treatment (MD 0.04 g/cm^3; 95% CI 0.01 to 0.07) (Analysis 3.2) (Ling JY 2008);
- Bushenjianpi Zhuangguyin versus Caltrate and calcitonin after 12 weeks treatment (MD 0.16 g/cm^3; 95% CI 0.10 to 0.22) (Analysis 3.2) (Zhang XG 2011);
- Liuwei Dihuang pills versus Caltrate after six months (MD 0.05 g/cm^3; 95% CI 0.03 to 0.07) (Analysis 3.2) (Ma C 2011);
- Gujian capsule versus alfacalcidol after six months treatment (MD 0.14 g/cm^3; 95% CI 0.03 to 0.26) (Analysis 3.2) (Meng XD 2003);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD 0.05 g/cm^3; 95% CI 0.03 to 0.07) (Analysis 3.2) (Ou L 2011);
- Kangshu Jiangu granule versus Caltrate after six months treatment (MD 0.11 g/cm^3; 95% CI 0.01 to 0.21) (Analysis 3.2) (Shi CD 2012);
- Erxian soup versus Caltrate after six months treatment (MD 0.06 g/cm^3; 95% CI 0.02 to 0.11) (Analysis 3.2) (Wu JZ 2010);
- Shangke Jiegu tablet versus vitamin D2 plus calcium tablet after six months treatment (MD 0.25 g/cm^3; 95% CI 0.11 to 0.39) (Analysis 3.2) (Yuan YN 2000).

BMD of the radius

Treatment with Liuwei Dihuang pills statistically significantly increased the BMD of the radius as compared to a group supplemented with calcium. The difference at 12 months between before and after treatment was MD 0.04 g/cm^3 (95% CI 0.03 to 0.05) (Analysis 3.2) (Zhang J 2003). Another trial of treatment with Gukang oral liquid as compared to treatment with calcium gluconate reported a significant increase in the BMD of the radius after six months treatment (MD 0.02 g/cm^3; 95% CI 0.01 to 0.04) (Analysis 3.2) (Chen JP 1999). A third trial showed positive effects of herbal treatments when compared to vitamin D and Caltrate: compared with vitamin D plus Caltrate, Herba epimedii prescription statistically significantly increased the BMD of the radius after six months treatment (MD 0.07 g/cm^3; 95% CI 0.04 to 0.11) (Analysis 3.2) (Dong YF 2004).

Other trials comparing herbal treatments to vitamin D and calcium showed no significant difference in the BMD of the radius, including:

- Bushen Yigu soft extract versus Alfacalcidol after three months treatment (MD 0.01 g/cm^3; 95% CI -0.02 to 0.04) (Analysis 3.2) (Wang XY 2000);
- Bugu Shengsui capsule versus vitamin D2 and calcium tablets after six months treatment (MD 0.08 g/cm^3; 95% CI -0.12 to 0.28) (Analysis 3.2) (Xie YM 1997);
- Shangke Jiegu tablet versus vitamin D2 and calcium tablets after six months treatment (MD 0.04 g/cm^3; 95% CI 0.02 to 0.11) (Analysis 3.2) (Yuan YN 2000).

BMD of the ulna

Four trials showed no significant effects on the BMD of the ulna:

- Gukang oral liquid versus calcium gluconate (MD 0.00 g/cm^3; 95% CI -0.02 to 0.02) (Analysis 3.2) (Chen JP 1999);
- Bushen Yigu soft extract versus Alfacalcidol after three months treatment (MD 0.02 g/cm^3; 95% CI -0.01 to 0.05) (Analysis 3.2) (Wang XY 2000);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablets after six months treatment (MD 0.06 g/cm^3; 95% CI -0.01 to 0.13) (Analysis 3.2) (Xie YM 1997);
- Shangke Jiegu tablet versus vitamin D2 plus calcium tablets after six months treatment (MD 0.05 g/cm^3; 95% CI 0.00 to 0.11) (Analysis 3.2) (Yuan YN 2000).

After 12 months treatment with Liuwei Dihuang pills, the BMD of the ulna was statistically significantly increased when compared with calcium supplementation (MD 0.02 g/cm^3; 95% CI 0.01 to 0.03) (Analysis 3.2) (Zhang J 2003).

BMD of the femoral neck

Eight trials of Chinese herbal medicines compared with supplementation with calcium or calcium plus other western medicine showed a significant increase in the BMD of the femoral neck:

- Qianggu soft extract versus calcium gluconate after six months treatment (MD 0.07 g/cm^3; 95% CI 0.02 to 0.12) (Analysis 3.2) (Peng T 2002);
- Herba epimedii prescription versus vitamin D plus Caltrate after six months treatment (MD 0.06 g/cm^3; 95% CI 0.02 to 0.10) (Analysis 3.2) (Dong YF 2004);
- Kangshu Jiangu granule versus Caltrate after six months treatment (MD 0.08 g/cm^3; 95% CI 0.01 to 0.15) (Analysis 3.2) (Shi CD 2012);
- kidney-tonifying herbs versus calcium after six months treatment (MD 0.05 g/cm^3; 95% CI 0.01 to 0.09) (Analysis 3.2) (Song XW 2000);
- Qianggu paste versus calcium gluconate after six months treatment (MD 0.07 g/cm^3; 95% CI 0.03 to 0.11) (Analysis 3.2) (Wang H 2007);
- Yanghuo Sanzi Tang versus Caltrate after six months treatment (MD 0.05 g/cm^3; 95% CI 0.02 to 0.08) (Analysis 3.2) (Qiu RB 2004);
- Jiangu capsule versus Caltrate after 12 months treatment (MD 0.04 g/cm^3; 95% CI 0.03 to 0.06) (Analysis 3.2) (Wang YZ 2008);
- Gujian capsule versus alfacalcidol after six months treatment (MD 0.08 g/cm^3; 95% CI 0.03 to 0.14) (Analysis 3.2) (Meng XD 2003).

Ten other trials showed no significant difference in the BMD of the femoral neck for those treated with Chinese herbal medicines when compared to control groups:

- Kanggusong granule versus Caltrate after nine months treatment (MD 0.01 g/cm^3; 95% CI -0.03 to 0.05), Kanggusong granule versus ipriflavone plus Caltrate after nine months treatment (MD -0.01 g/cm^3; 95% CI -0.04 to 0.02) (Analysis 3.2) (An SJ 2000);
- Bushen Jianpi decoction versus calcitonin (MD 0.05 g/cm^3; 95% CI -0.02 to 0.12) (Analysis 3.2) (Mao YF 2011);
- Gumikang capsule versus calcium gluconate after six months treatment (MD 0.02 g/cm^3; 95% CI -0.04 to 0.08) (Analysis 3.2) (Wang CC 2005);
- Yanghuo Sanzi Tang versus Caltrate after three months treatment (MD 0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 3.2) (Qiu RB 2004);
- Qianggu capsule versus active vitamin D3 after six months treatment (MD 0.03 g/cm^3; 95% CI -0.01 to 0.07) (Analysis 3.2) (Wang J 2007);
- Shigu yin versus Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI -0.01 to 0.07) (Analysis 3.2) (Zhang YP 2007);
- Bushen Huoxue capsule versus Caltrate plus calcitriol after 12 months treatment (MD 0.02 g/cm^3; 95% CI -0.06 to 0.10) (Analysis 3.2) (Zhang XJ 2008);
- Bushenjianpi Zhuangguyin versus Caltrate and calcitonin after 12 weeks (MD 0.06 g/cm^3; 95% CI 0.00 to 0.12) (Analysis 3.2) (Zhang XG 2011);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet after six months treatment (MD 0.09 g/cm^3; 95% CI -0.05 to 0.23) (Analysis 3.2) (Xie YM 1997);
- Shangke Jiegu tablet versus vitamin D2 plus calcium tablet after six months treatment (MD 0.07 g/cm^3; 95% CI -0.06 to 0.20) (Analysis 3.2) (Yuan YN 2000).

Three trials compared Chinese herbal medicines with western medicine and found no significant differences between groups on measurement of BMD of the femoral neck:

- Bushen Shengsui principle versus conjugated oestrogens plus medroxyprogesterone after six months treatment (MD -0.01 g/cm^3; 95% CI -0.11 to 0.09) (Analysis 3.2) (Liao L 2004);
- kidney-tonifying herbs versus nilestriol after six months treatment (MD 0.02 g/cm^3; 95% CI -0.02 to 0.06) (Analysis 3.2) (Song XW 2000);
- Qianggu capsules versus oestradiol valerate after six months treatment (MD 0.02 g/cm^3; 95% CI -0.02 to 0.06) (Analysis 3.2) (Ruan XY 2006).

BMD of Ward's triangle

Two trials showed no evidence of an effect on the BMD of Ward's triangle of Chinese herbal medicines when compared with alendronate after six months treatment:

- Qianggu capsule (MD 0.01 g/cm^3; 95% CI -0.02 to 0.03) (Analysis 3.2) (Xu H 2010);

- Xianlinggubao capsule (MD 0.00 g/cm^3; 95% CI -0.02 to 0.02) (Analysis 3.2) (Xu M 2009).

Two other trials showed no evidence of an effect of Chinese herbal medicines when compared with vitamin D2 plus calcium tablet after six months treatment:

- Bugu Shengsui capsule (MD 0.07 g/cm^3; 95% CI -0.05 to 0.19) (Analysis 3.2) (Xie YM 1997);
- Shangke Jiegu capsule (MD 0.10 g/cm^3; 95% CI -0.01 to 0.22) (Analysis 3.2) (Yuan YN 2000).

There was no significant difference between Chinese herbal medicine (Kanggusong granule) and ipriflavone plus Caltrate (MD -0.03 g/cm^3; 95% CI -0.07 to 0.01), or Caltrate alone (MD 0.00 g/cm^3; 95% CI -0.04 to 0.04) after nine months treatment (Analysis 3.2) (An SJ 2000). Gujian capsule appeared statistically significantly better than alfacalcidol after six months treatment (MD 0.08 g/cm^3; 95% CI 0.01 to 0.15) (Analysis 3.2) (Meng XD 2003).

The trial comparing kidney-tonifying herbs with treatment with nilestriol (MD 0.06 g/cm^3; 95% CI 0.02 to 0.10) or supplementation with calcium (MD 0.10 g/cm^3; 95% CI 0.06 to 0.14) (Analysis 3.2) (Song XW 2000) found a significant improvement in the BMD of Ward's triangle.

BMD of the trochanter

One trial showed better treatment effects of Chinese herbal medicines on the BMD of the trochanter when compared with calcium supplementation:

- Shangke Jiegu tablet versus vitamin D2 plus calcium tablet after six months treatment (MD 0.19 g/cm^3; 95% CI 0.04 to 0.33) (Analysis 3.2) (Yuan YN 2000).

However, two other trials showed no evidence of an effect of Chinese herbal medicines:

- Kanggusong granule versus ipriflavone plus Caltrate after nine months treatment (MD -0.01 g/cm^3; 95% CI -0.05 to 0.03) (Analysis 3.2) (An SJ 2000), or versus Caltrate alone (MD 0.03 g/cm^3; 95% CI 0.00 to 0.06) (Analysis 3.2) (An SJ 2000);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet after six months treatment (MD 0.11 g/cm^3; 95% CI -0.04 to 0.27) (Analysis 3.2) (Xie YM 1997).

There was a significant difference between Gujian capsule and alfacalcidol after six months treatment (MD 0.14 g/cm^3; 95% CI 0.07 to 0.20) (Analysis 3.2) (Meng XD 2003).

BMD of the hip bone

There was no significant difference between the Chinese herbal medicine Gushukang granule and Calcium carbonate with vitamin D chewable tablets in the BMD of the hip bone after six months treatment: the MD was 0.02 g/cm^3 (95% CI -0.02 to 0.06) (Analysis 3.2) (Chen ZX 2002). There was also no significant difference between the Chinese herbal medicine Guli powder when compared with Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI -0.05 to 0.11) (Analysis 3.2) (Lan ZX 2006).

BMD of the distal radius

TPF capsule compared to calcium granules statistically significantly increased the BMD of the distal radius (MD 0.20 g/cm^3; 95% CI 0.17 to 0.23) (Analysis 3.2) (Zhang YL 1996).

BMD of the calcaneus

Jiawei Zhuangyao Jianshen tang compared to compound calcium amino acid chelate capsules statistically significantly increased the BMD of the calcaneus (MD 0.06 g/cm^3; 95% CI 0.01 to 0.11) (Analysis 3.2) (He N 2006).

T score in BMD measurement

Two trials reported T score in bone mineral density measurement:

- Jingujian granule versus Caltrate after three months treatment (MD 0.05; 95% CI -0.57 to 0.67) (Analysis 3.3) (Li YH 2008);
- Jingujian granule versus Caltrate after three months treatment (MD 0.03; 95% CI -0.04 to 0.10) (Analysis 3.3) (Li YH 2010).

Biochemical indicators

The effects of the interventions on biochemical indicators are shown in Appendix 5.

Summary: Comparison 03

In summary, 61 trials out of the 108 included trials evaluated Chinese herbal medicines compared with conventional western medicines.

The following Chinese herbal medicines increased the BMD of the lumbar spine: Jiawei Bushen Zhuangjintang Yishen Yanggan mixture, Kanggusong granule, Bushen Qianggutang, Bushen Jianpi Migu prescription, Bushen Zhuanggu tang, Bushenjianpi Zhuangguyin, Gujian capsule, Erxian soup, Shangke Jiegu tablet, Liuwei Dihuang pills, Kangshu Jiangu granule, Radix rehmanniae preparata and Radix astragali. However, the following did not increase the BMD of the lumbar spine: Kanggusong granule, Strong Bone capsule, Herba epimedii prescription, Bushen Shengsui principle, Bushen Jianpi Jingu decoction, Gukang oral liquid, kidney-tonifying herbs, Bushen Jianpi Huoxue recipe, Huangqi Sanxian tang, Qianggu capsule, Jianshenfang granule, Jiangu recipe, Gukang fang, Qianggu capsule, Bushen Huoxue capsules, Yinyanghuo, Shenyao capsules, Guli powder, Gushen Yijing tang, Bugu Shengsui capsule, Xianling Gusong capsules,

Zishen Gukang pill, Gukang decoction, Gumiling granule, Gujian capsule, Xianlinggubao capsule and Bushen Tianjing Huoxue therapy.

Gukang oral liquid, Herba epimedii prescription and Liuwei Dihuang pills increased the BMD of the radius, while Bushen Yigu soft extract, Bugu Shengsui capsule and Shangke Jiegu tablet did not.

Liuwei Dihuang pills appeared to increase the BMD of the ulna, while Gukang oral liquid, Bushen Yigu soft extract, Bugu Shengsui capsule and Shangke Jiegu tablet did not.

The following Chinese herbal medicines appeared to improve the BMD of the femoral neck: Qianggu soft extract, Herba epimedii prescription, kidney-tonifying herbs, Qianggu paste, Yanghuo Sanzi tang, Jiangu capsule, Kangshu Jiangu granule and Gujian capsule. However, the following did not: Kanggusong granule, Bushen Jianpi decoction, Gumikang capsule, Yanghuo Sanzi Tang, Qianggu capsule, Shigu yin, Bushen Huoxue capsule, Bushenjianpi Zhuangguyin, Bugu Shengsui capsule, Shangke Jiegu tablet and Bushen Shengsui principle.

Gujian capsule and kidney-tonifying herbs seemed to increase the BMD of Ward's triangle, while Qianggu capsule, Xianlinggubao capsule, Bugu Shengsui capsule, Shangke Jiegu capsule and Kanggusong granule did not.

Shangke Jiegu tablet and Gujian capsule appeared to increase the BMD of the trochanter, while Kanggusong granule and Bugu Shengsui capsule did not.

Gushukang granule and Guli powder did not show statistically significant increases in the BMD of the hip bone.

TPF capsule appeared to increase the BMD of the distal radius.

Jiawei Zhuangyao Jianshen tang statistically significantly increased the BMD of the calcaneus.

Jingujian granule did not show a statistically significant increase in the T score of BMD.

Chinese herbal medicines plus western medicine versus western medicine (Comparison 04)

Fourty-seven trials (involving 5529 patients) compared 42 different Chinese herbal medicines plus western medicine with western medicine (Cao GY 2010; Cao W 2010; Chen FS 2001; Chen XL 2010; Chen YQ 2001; Chen ZX 2002; Dai Y 2007; Deng WM 2012; Dong Y 2010; Fan HX 2004; Guo JH 2008; Han XL 2007; He XQ 2006; Hu J 2012; Huang JW 2008; Jian QQ 2010; Liang DB 2012; Li HW 2004; Li SL 2004; Liu JM 2012; Ma C 2011; Ma CZ 2011; Ma YJ 2011; Miu JQ 2008; Mu G 2001; Qiu ZX 2010; Ruan XY 2006; Tang ZA 2012; Wang SW 2003; Wang XD 2011; Wu W 2005; Xie J 2004; Xiong YH 2008; Xu H 2010; Xu M 2009; Yang B 2007; Ye AN 1998; Zhan HS 2009; Zhang DS 2011; Zhang RH 2004; Zhang XZ 2004; Zhang ZF 2011; Zhao G 2002; Zheng WK 2007; Zhou XT 2001; Zhu HM 2012; Zou JJ 2005).

The tested herbs included Antai capsule, Bushenhuoxue therapy, Bushen Qianggu Huoxue therapy, Bushen Qiangshen pill, Bushen Yangxue tang, Bushen Zhuanggutang, Bushen Zhuanggu granules, Bushen Kangsong pill, Bushenyiqihuoxue soup, Chinese medicine (combination of 10 herbs), Chinese medicine Bushenhuoxue recipe, Erxian Yanggu decoction, Gengnian Anyi tablet, Guben Zhuanggu capsules, Guilu Erxiantang, Gukang tablet, Gushen decoction, Gushukang granule, Gusongbao granule, Heche Dazao pill, Huangqi, Hugu capsule, Jiangu granule, Jiarong tablet, Jinwugutong capsules, Kanggusong soup, Liuwei Dihuang pills, Migu tablet, Qianggu capsule, Shangke Yishen Zhuanggu pill, Shengsuiyin recipe, Shugan zishen huoxue tang, traditional Chinese capsule, Xianlinggubao capsule, Xuduanzhuanggu capsule, Yigu capsule, Yishen Zhuanggu decoction, Yiyuanjiangu decoction, Zhuanggu capsule, Zhuangguqiangjin tablet, Zishen prescription and Ziyin Bushen Zhuanggu prescription. All these Chinese herbal medicines, except Huangqi, were mixtures of herbs. Based on our standard classification for Chinese herbal medicines, 17 herbs were Chinese proprietary medicine, and 25 were prescribed herbal formulae.

The reported outcomes included BMD of the lumbar spine, femoral neck, Ward's triangle, trochanter, hip bone and distal radius. Levels of oestradiol (E2), serum calcium (Ca), phosphorus (P), alkaline phosphatase (ALP), bone Gla protein (BGP) and interleukin-6 (IL-6) were also measured, as was the improvement of lumbago and backache. We were not able to pool the data due to the variability of the tested Chinese herbal medicines and control interventions.

Based on the included trials, we created a 'Summary of findings' table for patient-important outcomes (fractures, quality of life, death, adverse effects) (see Summary of findings 4).

Fractures

Five trials reported the outcome fractures. One trial reported that eight new fractures occurred in the control group treated with placebo and calcium (0/70 versus 8/70; RR 0.06; 95% CI 0.00 to 1.00) (Analysis 4.1) (Zhang RH 2004). One trial reported one new fracture in the control group treated with placebo plus calcium and vitamin D (low-dose group: 0/60 versus 1/60; RR 0.33; 95% CI 0.01 to 8.02; high-dose group: 0/56 versus 1/60; RR 0.36; 95% CI 0.01 to 8.58) (Analysis 4.1) (Zhu HM 2012). One trial reported four new fractures in the herbal group (Bushen Zhuanggu granules plus calcium and vitamin D) and seven new fractures in the control group (placebo granules plus calcium and vitamin D) (4/88 versus 7/67; RR 0.44; 95% CI 0.13 to 1.43) (Analysis 4.1) (Deng WM 2012). One trial reported one new fracture in the control group (calcium and vitamin D) (0/45 versus 1/30; RR 0.22; 95% CI 0.01 to 5.34) (Analysis 4.1) (Li ZP 2011). One trial reported that no new fracture occurred in any group (Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin ampoule group, and calcitonin ampoule group) (Analysis 4.1) (Zhang ZF 2011).

Quality of life or symptoms including pain, muscle fatigue and limited mobility

Eight of 48 trials reported the improvement of lumbago and backache. Among them, four trials reported that Chinese herbal medicines were better than western medicines without reporting the number of cases with ache improvement in each group (Liang DB 2012; Wang XD 2011; Xu H 2010; Zhan HS 2009). The other three trials reported as follows:

- 55/57 versus 48/57: RR 1.15; 95% CI 1.01 to 1.30 (Analysis 4.5) (Chen XL 2010);
- 53/54 versus 51/53: RR 1.33; 95% CI 1.09 to 1.61 (Analysis 4.5) (Dong Y 2010);
- 40/45 versus 18/30: RR 1.48; 95% CI 1.09 to 2.02 (Analysis 4.5) (Li ZP 2011).

In another trial, no significant difference was found between comparable groups (43/45 versus 35/37: RR 1.01; 95% CI 0.91 to 1.12) (Analysis 4.5) (Zhang ZF 2011).

Only one trial reported the outcome quality of life: the mean difference in quality of life score was 5.30 (95% CI 3.67 to 6.93) (Analysis 4.4) (Liang DB 2012).

Death

No trials reported this outcome.

Adverse effects

Eight trials out of 48 reported no remarkable adverse effects occurring in any groups (Chen FS 2001; Liang DB 2012; Liu JM 2012; Ruan XY 2006; Tang ZA 2012; Xie J 2004; Zheng WK 2007; Zou JJ 2005). Fourteen trials reported some adverse symptoms:

- a few patients with nausea, vomiting, etc. after one month of treatment (Cao W 2010);
- three patients with constipation and canker sore symptoms (Chen YQ 2001);
- 21 (23.86%) and 21 (31.34%) adverse effects in the herbal group and control group, respectively, with the predominant effects being liver enzyme abnormality and gastrointestinal complaints (Deng WM 2012);
- a few patients with dizziness, rash, nausea, vomiting and cardiopalmus at the beginning of therapy, but no significant difference in comparison groups (Dong Y 2010);
- one patient with irregular vaginal bleeding and two with breast tenderness in the western medicine group (Fan HX 2004);
- two cases of abdominal distention, acid reflux, etc. in the Liuwei Dihuang pills group, three cases with similar gastrointestinal symptoms in the Liuwei Dihuang pills plus calcium and vitamin D group, and three with similar gastrointestinal symptoms in the calcium and vitamin D group (Ma C 2011);
- three patients with mild constipation in the herbal group (Wang XD 2011);
- four patients with adverse effects (gastrointestinal reaction, nervous system response, anaphylactic reaction, etc.) in the Jiangu granule group, five in the Gusongbao granule group and five in the western medicine group (Xiong YH 2008);
- six patients with nausea in the herbal group and three in the western medicine group (Xu H 2010);
- three patients with nausea in the herbal group and three in the western medicine group (Xu M 2009);
- three patients with constipation, one with dysthesia, one with elevated ALT, six with abdominal discomfort and one with gum swelling in the Xuduanzhuanggu capsule group; one with dizziness, one with skin petechiae, one with abdominal discomfort and one with gum swelling in the Gusongbao granule group; one with constipation, one with abdominal discomfort, one with sore throat, one with gum swelling and one with electrocardiogram abnormality in the control group (Zhan HS 2009);
- five patients with dry mouth symptoms, dreaminess, dryness-heat in the experimental group, a few with a transient heightened blood calcium in the control group (Zhang RH 2004);
- five with flushed face, one with nausea and one with vomiting in 90 patients after using calcitonin (Zhang ZF 2011);
- 11 (18%), 12 (21%) and 11 (18%) adverse effects in the low-dose Xianlinggubao capsule group, high-dose Xianlinggubao capsule group and the control group, respectively, with the predominant effects being liver enzyme abnormality and gastrointestinal complaints (Zhu HM 2012).

The other 26 trials did not report adverse effects.

Bone mineral density (BMD)

BMD of the lumbar spine

Twenty-one trials showed positive effects of Chinese herbal medicines plus western medicine treatments when compared to the same western medicine on the BMD of the lumbar spine:

- Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol after six months treatment (MD 0.06 g/cm^3; 95% CI 0.01 to 0.11) (Analysis 4.2) (Chen FS 2001);
- Shugan zishen huoxue tang plus Caltrate and alendronate sodium tablets versus Caltrate and alendronate sodium tablets after six months treatment (MD 0.12 g/cm^3; 95% CI 0.08 to 0.16) (Analysis 4.2) (Han XL 2007);
- Shangke Yishen Zhuanggu pill, plus Caltrate and calcitonin, versus Caltrate and calcitonin after three months treatment (MD 0.04 g/cm^3; 95% CI 0.03 to 0.05) (Analysis 4.2) (Hu J 2012);
- Gukang tablet plus oyster shell calcium chewable tablets and vitamin A and D capsules versus oyster shell calcium chewable tablets and vitamin A and D capsules after three

months treatment (MD 0.24 g/cm^3; 95% CI 0.14 to 0.34) (Analysis 4.2) (Liu JM 2012);

- Ziyin Bushen Zhuanggu prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin after eight months treatment (MD 0.14 g/cm^3; 95% CI 0.08 to 0.20) (Analysis 4.2) (Li HW 2004);
- Liuwei Dihuang pills plus Caltrate versus Caltrate after six months treatment (MD 0.05 g/cm^3; 95% CI 0.02 to 0.08) (Analysis 4.2) (Ma C 2011);
- Xianlinggubao capsule plus Caltrate versus Caltrate after 12 months treatment (MD 0.30 g/cm^3; 95% CI 0.25 to 0.35) (Analysis 4.2) (Wu W 2005);
- Migu tablet plus Caltrate versus Caltrate after 12 months treatment (MD 0.08 g/cm^3; 95% CI 0.07 to 0.09) (Analysis 4.2) (Xie J 2004);
- Bushen Zhuanggutang plus Caltrate versus Caltrate after six months treatment (MD 0.14 g/cm^3; 95% CI 0.06 to 0.22) (Analysis 4.2) (Ye AN 1998);
- Zishen prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin after eight months treatment (MD 0.14 g/cm^3; 95% CI 0.08 to 0.20) (Analysis 4.2) (Zhao G 2002);
- Guben Zhuanggu capsules plus Caltrate versus Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI 0.01 to 0.05) (Analysis 4.2) (Zou JJ 2005);
- Qianggu capsule plus alendronate versus alendronate after six months treatment (MD 0.08 g/cm^3; 95% CI 0.03 to 0.12) (Analysis 4.2) (Xu H 2010);
- Xianlinggubao capsule plus alendronate versus alendronate after six months treatment (MD 0.06 g/cm^3; 95% CI 0.03 to 0.09) (Analysis 4.2) (Xu M 2009);
- Xianlinggubao capsule plus Caltrate versus Caltrate after 12 months treatment (MD 0.31 g/cm^3; 95% CI 0.28 to 0.34) (Analysis 4.2) (Qiu ZX 2010);
- Xianlinggubao capsule plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.18 g/cm^3; 95% CI 0.14 to 0.22), and Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.17 g/cm^3; 95% CI 0.14 to 0.20) (Analysis 4.2) (Dai Y 2007);
- Jinwugutong capsule plus calcium versus placebo plus calcium after six months treatment (MD 0.11 g/cm^3; 95% CI 0.07 to 0.15) (Analysis 4.2) (Zheng WK 2007);
- Chinese medicine Bushenhuoxue recipe plus conventional western medicine (alfacalcidol soft capsules, bisphosphonate and salmon calcitonin, etc.) versus conventional western medicine after three months treatment (MD 0.16 g/cm^3; 95% CI 0.09 to 0.22) (Analysis 4.2) (Cao GY 2010);
- Shengsuiyin recipe plus Caltrate versus Caltrate after 12 months treatment (MD 0.31 g/cm^3; 95% CI 0.28 to 0.34) (Analysis 4.2) (Jian QQ 2010);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 0.08 g/cm^3; 95% CI 0.04 to 0.12) (Analysis 4.2) (Zhang RH 2004);
- Chinese medicine (combination of 10 herbs) plus tamoxifen and Caltrate versus tamoxifen and Caltrate after three months treatment (MD 0.10 g/cm^3; 95% CI 0.06 to 0.14) (Analysis 4.2) (Cao W 2010);
- Huangqi plus calcium and vitamin D versus calcium and vitamin D after six months treatment (MD 0.06 g/cm^3; 95% CI 0.01 to 0.11) (Analysis 4.2) (Yang B 2007).

No significant difference in the BMD of the lumbar spine was reported for any of the following comparisons of treatment groups:

- Jiarong tablet plus Caltrate versus Caltrate (MD 0.04 g/cm^3; 95% CI -0.06 to 0.14) (Analysis 4.2) (Chen YQ 2001);
- Bushen Kangsong pill plus calcium carbonate tablets versus calcium carbonate tablets (MD 0.01 g/cm^3; 95% CI -0.03 to 0.04) (Analysis 4.2) (Guo JH 2008);
- Shugan zishen huoxue tang plus Caltrate and alendronate sodium tablets versus Caltrate and alendronate sodium tablets after three months treatment (MD 0.04 g/cm^3; 95% CI -0.01 to 0.09) (Analysis 4.2) (Han XL 2007);
- Bushen Yangxue tang plus Caltrate versus Caltrate (MD 0.02 g/cm^3; 95% CI -0.02 to 0.06) (Analysis 4.2) (He XQ 2006);
- Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol versus calcium carbonate tablets and alfacalcidol (MD -0.01 g/cm^3; 95% CI -0.04 to 0.02) (Analysis 4.2) (Liang DB 2012);
- Ziyin Bushen Zhuanggu prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin after four months treatment (MD 0.05 g/cm^3; 95% CI 0.00 to 0.10) (Analysis 4.2) (Li HW 2004);
- Zhuanggu capsule plus Caltrate versus Caltrate (MD 0.01 g/cm^3; 95% CI 0.00 to 0.02) (Analysis 4.2) (Li SL 2004);
- Yiyuanjiangu decoction plus calcitonin ampoule and calcium carbonate tablet versus calcitonin ampoule and calcium carbonate tablet (MD 0.02 g/cm^3; 95% CI -0.01 to 0.05) (Analysis 4.2) (Ma CZ 2011);
- Yishen Zhuanggu decoction plus calcitriol soft capsule versus calcitriol soft capsule (MD 0.02 g/cm^3; 95% CI 0.00 to 0.05) (Analysis 4.2) (Ma YJ 2011);
- Bushen Qianggu Huoxue therapy plus calcium and cod liver oil versus calcium and cod liver oil (MD 0.05 g/cm^3; 95% CI -0.01 to 0.11) (Analysis 4.2) (Tang ZA 2012);
- Antai capsule plus Caltrate versus Caltrate (MD 0.04 g/cm^3; 95% CI 0.00 to 0.08) (Analysis 4.2) (Wang SW 2003);
- Hugu capsule plus Caltrate versus placebo capsule plus Caltrate (MD 0.03 g/cm^3; 95% CI 0.00 to 0.06) (Analysis 4.2) (Wang XD 2011);
- Xianlinggubao capsule plus Caltrate versus Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI -0.02 to 0.08) (Analysis 4.2) (Wu W 2005);
- Zishen prescription plus Caltrate and calcitonin versus

Caltrate plus calcitonin after four months treatment (MD 0.05 g/cm^3; 95% CI 0.00 to 0.10) (Analysis 4.2) (Zhao G 2002);

- Guilu Erxiantang plus calcium carbonate tablet versus calcium carbonate tablet (MD 0.03 g/cm^3; 95% CI -0.03 to 0.09) (Analysis 4.2) (Zhou XT 2001);
- Xianlinggubao capsule (low-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (MD 0.00 g/cm^3; 95% CI -0.04 to 0.04) and Xianlinggubao capsule (high-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (MD 0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 4.2) (Zhu HM 2012);
- Bushen Kangsong pill plus calcium carbonate tablets versus calcium carbonate tablets after six months treatment (MD 0.01 g/cm^3; 95% CI -0.03 to 0.04) (Analysis 4.2) (Guo JH 2008);
- Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule after six months treatment (MD -0.01 g/cm^3; 95% CI -0.07 to 0.05) (Analysis 4.2) (Xiong YH 2008);
- Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate after three months treatment (MD 0.03 g/cm^3; 95% CI -0.03 to 0.09) (Analysis 4.2) (Dong Y 2010);
- Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate after 48 weeks treatment (MD 0.01 g/cm^3; 95% CI -0.03 to 0.06) (Analysis 4.2) (Zhang XZ 2004);
- Jiangu granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule after six months treatment (MD 0.04 g/cm^3; 95% CI -0.02 to 0.10) (Analysis 4.2) (Xiong YH 2008);
- Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.02 g/cm^3; 95% CI -0.01 to 0.05) and Gusongbao granule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD -0.01 g/cm^3; 95% CI -0.05 to 0.03) (Analysis 4.2) (Zhan HS 2009);
- Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin ampoule versus calcitonin ampoule after 12 months treatment (MD 0.01 g/cm^3; 95% CI -0.04 to 0.06) (Analysis 4.2) (Zhang ZF 2011);
- Huangqi plus calcium and vitamin D versus calcium and vitamin D after three months treatment (MD 0.03 g/cm^3; 95% CI -0.01 to 0.07) (Analysis 4.2) (Yang B 2007).
- Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin ampoule versus calcitonin ampoule after 12 months treatment (MD 0.01 g/cm^3; 95% CI -0.04 to 0.06) (Analysis 4.2) (Zhang ZF 2011);
- Huangqi plus calcium and vitamin D versus calcium and vitamin D after three months treatment (MD 0.03 g/cm^3; 95% CI -0.01 to 0.07) (Analysis 4.2) (Yang B 2007).

BMD of the femoral neck

Seven trials showed positive effects of Chinese herbal medicines plus western medicine treatments when compared to the same western medicine on the BMD of the femoral neck:

- Jiarong tablet plus Caltrate versus Caltrate after six months treatment (MD 0.09 g/cm^3; 95% CI 0.02 to 0.15) (Analysis 4.2) (Chen YQ 2001);
- Xianlinggubao capsule plus Caltrate versus Caltrate after 12 months treatment (MD 0.30 g/cm^3; 95% CI 0.25 to 0.35) (Analysis 4.2) (Wu W 2005);
- Migu tablet plus Caltrate versus Caltrate (MD 0.09 g/cm^3; 95% CI 0.08 to 0.10) (Analysis 4.2) (Xie J 2004);
- Chinese medicine Bushenhuoxue recipe plus conventional western medicine (alfacalcidol soft capsules, bisphosphonate and salmon calcitonin, etc.) versus conventional western medicine after three months treatment (MD 0.17 g/cm^3; 95% CI 0.12 to 0.23) (Analysis 4.2) (Cao GY 2010);
- Xianlinggubao capsule plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.26 g/cm^3; 95% CI 0.22 to 0.30) and Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.24 g/cm^3; 95% CI 0.21 to 0.27) (Analysis 4.2) (Dai Y 2007);
- Huangqi plus calcium and vitamin D versus calcium and vitamin D after six months treatment (MD 0.07 g/cm^3; 95% CI 0.03 to 0.11) (Analysis 4.2) (Yang B 2007);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 0.04 g/cm^3; 95% CI 0.01 to 0.07) (Analysis 4.2) (Zhang RH 2004).

No significant difference in the BMD of the femoral neck was reported for any of the following comparisons of treatment groups:

- Qianggu capsules plus oestradiol valerate versus oestradiol valerate after six months treatment (MD 0.03 g/cm^3; 95% CI -0.01 to 0.07) (Analysis 4.2) (Ruan XY 2006);
- Antai capsule plus Caltrate versus Caltrate after six months treatment (MD 0.01 g/cm^3; 95% CI -0.02 to 0.04) (Analysis 4.2) (Wang SW 2003);
- Xianlinggubao capsule plus Caltrate versus Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI -0.02 to 0.08) (Analysis 4.2) (Wu W 2005);
- Guben Zhuanggu capsules plus Caltrate versus Caltrate after six months treatment (MD 0.01 g/cm^3; 95% CI -0.01 to 0.02) (Analysis 4.2) (Zou JJ 2005);
- Heche Dazao pill plus oyster shell calcium chewable tablets versus oyster shell calcium chewable tablets after three months treatment (MD 0.04 g/cm^3; 95% CI 0.00 to 0.07) (Analysis 4.2) (Chen XL 2010);
- Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule after six months treatment (MD 0.01 g/cm^3; 95% CI -0.03 to 0.05) and Jiangu granule plus

compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule after six months treatment (MD -0.02 g/cm^3; 95% CI -0.07 to 0.03) (Analysis 4.2) (Xiong YH 2008);

- Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.01 g/cm^3; 95% CI -0.01 to 0.03) and Gusongbao granule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 4.2) (Zhan HS 2009);
- Yiyuanjiangu decoction plus calcitonin ampoule and calcium carbonate tablet versus calcitonin ampoule and calcium carbonate tablet after three months treatment (MD 0.01 g/cm^3; 95% CI -0.01 to 0.03) (Analysis 4.2) (Ma CZ 2011);
- Bushen Qianggu Huoxue therapy plus calcium and cod liver oil versus calcium and cod liver oil after three months treatment (MD 0.02 g/cm^3; 95% CI -0.02 to 0.05) (Analysis 4.2) (Tang ZA 2012);
- Xianlinggubao capsule (low-dose or high-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (MD -0.01 g/cm^3; 95% CI -0.05 to 0.03) (Analysis 4.2) (Zhu HM 2012).

BMD of Ward's triangle

Six trials showed positive effects of Chinese herbal medicines plus western medicine treatments when compared to the same western medicine on the BMD of Ward's triangle:

- Migu tablet plus Caltrate versus Caltrate (MD 0.09 g/cm^3; 95% CI 0.08 to 0.10) (Analysis 4.2) (Xie J 2004);
- Qianggu capsule plus alendronate versus alendronate after six months treatment (MD 0.05 g/cm^3; 95% CI 0.02 to 0.07) (Analysis 4.2) (Xu H 2010);
- Xianlinggubao capsule plus alendronate versus alendronate after six months treatment (MD 0.04 g/cm^3; 95% CI 0.02 to 0.06) (Analysis 4.2) (Xu M 2009);
- Xianlinggubao capsule plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.23 g/cm^3; 95% CI 0.19 to 0.27) and Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.28 g/cm^3; 95% CI 0.24 to 0.32) (Analysis 4.2) (Dai Y 2007);
- Bushen Qianggu Huoxue therapy plus calcium and cod liver oil versus calcium and cod liver oil after three months treatment (MD 0.04 g/cm^3; 95% CI 0.02 to 0.07) (Analysis 4.2) (Tang ZA 2012);
- Hugu capsule plus Caltrate versus placebo capsule plus Caltrate after six months treatment (MD 0.05 g/cm^3; 95% CI 0.02 to 0.08) (Analysis 4.2) (Wang XD 2011).

No significant difference in the BMD of Ward's triangle was reported for any of the following comparisons of treatment groups:

- Antai capsule plus Caltrate versus Caltrate after six months treatment (MD 0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 4.2) (Wang SW 2003);
- Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule after six months treatment (MD -0.01 g/cm^3; 95% CI -0.06 to 0.04) and Jiangu granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule after six months treatment (MD -0.01 g/cm^3; 95% CI -0.06 to 0.04) (Analysis 4.2) (Xiong YH 2008);
- Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.02 g/cm^3; 95% CI 0.00 to 0.04) and Gusongbao granule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.01 g/cm^3; 95% CI -0.02 to 0.04) (Analysis 4.2) (Zhan HS 2009);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 0.04 g/cm^3; 95% CI 0.00 to 0.08) (Analysis 4.2) (Zhang RH 2004).

BMD of the trochanter

Three trials showed positive effects of Chinese herbal medicines plus western medicine treatments when compared to the same western medicine on the BMD of the trochanter:

- Migu tablet plus Caltrate versus Caltrate after six months treatment (MD 0.15 g/cm^3; 95% CI 0.14 to 0.16) (Analysis 4.2) (Xie J 2004);
- Xianlinggubao capsule plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.13 g/cm^3; 95% CI 0.08 to 0.18) and Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule after six months treatment (MD 0.12 g/cm^3; 95% CI 0.07 to 0.17) (Analysis 4.2) (Dai Y 2007);
- Yiyuanjiangu decoction plus calcitonin ampoule and calcium carbonate tablet versus calcitonin ampoule and calcium carbonate tablet after six months treatment (MD 0.02 g/cm^3; 95% CI 0.01 to 0.04) (Analysis 4.2) (Ma CZ 2011).

No significant difference in the BMD of the trochanter was reported for any of the following comparisons of treatment groups:

- Antai capsule plus Caltrate versus Caltrate after six months treatment (MD 0.03 g/cm^3; 95% CI 0.00 to 0.06) (Analysis 4.2) (Wang SW 2003);
- Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.00 g/cm^3; 95% CI -0.02 to 0.02) and Gusongbao granule plus calcium tablet versus placebo plus calcium tablet after six months treatment (MD 0.00 g/cm^3; 95% CI -0.03 to 0.03) (Analysis 4.2) (Zhan HS 2009);

- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 0.02 g/cm^3; 95% CI -0.02 to 0.06) (Analysis 4.2) (Zhang RH 2004).

BMD of the hip bone

Compared with Calcium carbonate with vitamin D chewable tablets, Gushukang granule plus Calcium carbonate with vitamin D chewable tablets showed a statistically significantly better effect on the BMD of the hip bone after six months treatment (MD 0.15 g/cm^3; 95% CI 0.11 to 0.19) (Analysis 4.2) (Chen ZX 2002). There was no significant difference in the comparison of Jinwugutong capsules plus calcium and placebo plus calcium regarding the BMD of the hip bone (MD 0.01 g/cm^3; 95% CI -0.02 to 0.04) (Analysis 4.2) (Zheng WK 2007).

BMD of the distal radius

There was no significant difference in the comparison of Gengnian Anyi tablet plus Caltrate and Caltrate regarding the BMD of the distal radius (MD 0.01 g/cm^3; 95% CI -0.06 to 0.08) (Analysis 4.2) (Fan HX 2004). However, Bushen Zhuanggu granules plus calcium and vitamin D showed positive effects on the BMD of the distal radius when compared with placebo granules plus calcium and vitamin D after five-year follow-up (MD 0.10 g/cm^3; 95% CI 0.09 to 0.10) (Analysis 4.2) (Deng WM 2012).

T score in BMD measurement

One trial reported the T score in bone mineral density measurement: Erxian Yanggu decoction plus alendronate sodium tablets versus alendronate sodium tablets (MD of T score 0.91; 95% CI 0.57 to 1.25) (Analysis 4.3) (Huang JW 2008).

Biochemical indicators

The effects of the interventions on biochemical indicators are shown in Appendix 5.

Summary: Comparison 04

In summary, 37 trials out of 93 included trials evaluated Chinese herbal medicines plus conventional medicine compared with the same conventional medicine.

The results showed that the following Chinese herbal medicines appeared to increase the BMD of the lumbar spine: Gushen decoction, Shugan zishen huoxue tang, Erxian Yanggu decoction, Ziyin Bushen Zhuanggu prescription, Xianlinggubao capsules, Migu tablet, Bushen Zhuanggutang, Zishen prescription, Guben Zhuanggu capsules, Qianggu capsule, Jinwugutong capsule, Shengsuiyin recipe, Yigu capsule and Huangqi. However, the following did not: Jiarong tablet, Bushen Kangsong pill, Shugan zishen huoxue tang, Bushen Yangxue tang, Bushenhuoxue therapy, Ziyin Bushen Zhuanggu prescription, Zhuanggu capsule, Yiyuanjiangu decoction, Yishen Zhuanggu decoction, Bushen Qianggu Huoxue therapy, Antai capsule, Hugu capsule, Xianlinggubao capsule, Zishen prescription, Guilu Erxiantang, Bushen Kangsong pill, Gusongbao granule, Jiangu granule, Zhuangguqiangjin tablet and Shujinbogu tablet, Xuduanzhuanggu capsule and Huangqi.

The following Chinese herbal medicines appeared to increase the BMD of the femoral neck: Jiarong tablet, Xianlinggubao capsule, Migu tablet, Bushenhuoxue recipe, Huangqi and Yigu capsule. However, the following did not: Qianggu capsules, Antai capsule, Xianlinggubao capsule, Guben Zhuanggu capsules, Heche Dazao pill, Gusongbao granule, Jiangu granule, Xuduanzhuanggu capsule, Yiyuanjiangu decoction and Bushen Qianggu Huoxue therapy.

The following Chinese herbal medicines appeared to increase the BMD of Ward's triangle: Migu tablet, Qianggu capsule, Xianling Gubao capsule, Bushen Qianggu Huoxue therapy and Hugu capsule. However, the following did not: Antai capsule, Gusongbao granule, Xuduanzhuanggu capsule and Yigu capsule.

The following Chinese herbal medicines appeared to increase the BMD of the trochanter: Migu tablet, Yiyuanjiangu decoction and Xianlinggubao capsule. However, the following did not: Antai capsule, Xuduanzhuanggu capsule and Yigu capsule.

Gushukang granule seemed to increase the BMD of the hip bone, while Jinwugutong capsules did not.

Bushen Zhuanggu granules appeared to increase the BMD of the distal radius, while Gengnian Anyi tablet dd not.

Erxian Yanggu decoction appeared to increase the T score of BMD.

ADDITIONAL SUMMARY OF FINDINGS *[Explanation]*

Chinese herbal medicines versus no intervention for osteoporosis

Patient or population: patients with osteoporosis
Settings: inpatients and outpatients
Intervention: Chinese herbal medicine versus no intervention

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control (no intervention)	Chinese herbal medicine				
New fractures	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Quality of life	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Death	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Serious adverse events	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
BMD of lumbar spine (Bushen Shengsui principle versus no intervention) Follow-up: 6 months Scale from: 0 to 4	The mean BMD in the control groups was **0.82 g/cm^3**	The mean BMD in the intervention groups was **0.07 higher** (0.06 lower to 0.2 higher)		61 (1 study)	⊕⊕◯◯ **low**[1,2]	MD 0.07 g/cm^3 (-0.06 to 0.20) Absolute risk difference 2% (-2% to 5%) Relative per cent change 9% (-7% to 24%) Not statistically significant

BMD of femoral neck (Shigu yin versus no intervention) Follow-up: 6 months Scale from: 0 to 4	The mean BMD in the control groups was **0.60 g/cm^3**	The mean BMD in the intervention groups was **0.08 higher** (0.03 to 0.13 higher)		80 (1 study)	⊕⊕◯◯ **low**[1,2]	MD 0.08 g/cm^3 (0.03 to 0.13) Absolute risk difference 2% (1% to 3%) Relative per cent change 13% (5% to 22%) NNT 4 (3 to 8)
BMD of femoral neck (Shengu capsule versus no intervention) Follow-up: 6 months Scale from: 0 to 4	The mean BMD in the control groups was **0.62 g/cm^3**	The mean in the intervention groups was **0.02 higher** (0.06 lower to 0.09 higher)		34 (1 study)	⊕⊕◯◯ **low**[1,2]	MD 0.02 g/cm^3 (-0.06 to 0.09) Absolute risk difference 1% (-2% to 2%) Relative per cent change 3% (-10% to 15%) Not statistically significant

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
BMD: bone mineral density; **CI:** confidence interval; **MD:** mean difference; **NNT:** number needed to treat; **RR:** risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]No information on adequate sequence generation and not all the outcomes that were of interest in this review were reported.
[2]The total population size is less than 400 (a threshold rule-of-thumb value).

Chinese herbal medicines versus western medicine for osteoporosis

Patient or population: patients with osteoporosis
Settings: outpatients and inpatients
Intervention: Chinese herbal medicine versus western medicine

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control (western medicine)	Chinese herbal medicine				
New fractures (Kanggusong granule versus calcium and vitamin D) Follow-up: 9 months	**0 per 40**	**0 per 31**	Not estimable	71 (1 study)	⊕⊕◯◯ **very low**[1,2]	We are uncertain about the estimate[3]
Quality of life	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Death	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Serious adverse events	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
BMD of lumbar spine (Bushenjianpi Zhuangguyin versus Caltrate and calcitonin) Follow-up: 12 weeks Scale from: 0 to 4	The mean BMD in the control groups was **0.79 g/cm^3**	The mean BMD in the intervention groups was **0.16 higher** (0.1 to 0.22 higher)		100 (1 study)	⊕⊕◯◯ **low**[1,2]	MD 0.16 g/cm^3 (0.10 to 0.22) Absolute risk difference 4% (3% to 6%) Relative per cent change 20% (13% to 18%) NNT 3 (2 to 4)

BMD of lumbar spine (Liuwei Dihuang pills versus calcium and vitamin D) Follow-up: 6 months Scale from: 0 to 4	The mean BMD in the control groups was **0.89 g/cm^3**	The mean BMD in the intervention groups was **0.05 higher** (0.03 to 0.07 higher)		71 (1 study)	⊕⊕◯◯ **low**[1,2]	MD 0.05 g/cm^3 (0.03 to 0.07) Absolute risk difference 1% (1% to 2%) Relative per cent change 6% (3% to 8%) NNT 3 (2 to 5)
BMD of femoral neck (Kanggusong granule versus calcium and vitamin D) Follow-up: 9 months Scale from: 0 to 4	The mean BMD in the control groups was **0.71 g/cm^3**	The mean BMD in the intervention groups was **0.01 higher** (0.03 lower to 0.05 higher)		71 (1 study)	⊕⊕◯◯ **low**[1,2]	MD 0.01 g/cm^3 (-0.03 to 0.05) Absolute risk difference 0.25% (-1% to 1%) Relative per cent change 1% (-4% to 7%) Not statistically significant

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
BMD: bone mineral density; **CI:** confidence interval; **MD:** mean difference; **NNT:** number needed to treat; **RR:** risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]No information on adequate sequence generation and not all the outcomes that were of interest in this review were reported.
[2]The total population size is less than 400 (a threshold rule-of-thumb value).
[3]Only one trial out of 61 reported this outcome.

Chinese herbal medicines plus western medicine versus western medicine for osteoporosis

Patient or population: patients with osteoporosis
Settings: inpatients
Intervention: Chinese herbal medicine plus western medicine versus western medicine

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control (western medicine)	Chinese herbal medicine plus western medicine				
New fractures (Yigu capsule plus calcium versus placebo plus calcium) Follow-up: 6 months	**114 per 1000**	**0 per 1000** (0 to 114)	**RR 0.06** (0 to 1)	140 (1 study)	⊕⊕◯◯ **very low**[1,2]	We are uncertain about the estimate[3]
New fractures (Xianlinggubao capsule (low-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D) Follow-up: 12 months	**17 per 1000**	**0 per 1000** (0 to 134)	**RR 0.33** (0.01 to 8.02)	120 (1 study)	⊕⊕◯◯ **very low**[1,2]	We are uncertain about the estimate[3]
New fractures (Bushen Zhuanggu granules plus calcium and vitamin D versus placebo granules plus calcium and vitamin D) Follow-up: 5 years	**104 per 1000**	**46 per 1000** (14 to 149)	**RR 0.44** (0.13 to 1.43)	155 (1 study)	⊕⊕◯◯ **very low**[1,2]	We are uncertain about the estimate[3]

New fractures (Kanggusong soup plus calcium and vitamin D versus calcium and vitamin D) Follow-up: 3 months	**33 per 1000**	**0 per 1000** (0 to 178)	**RR 0.22** (0.01 to 5.34)	75 (1 study)	⊕⊕◯◯ **very low**[1,2]	We are uncertain about the estimate[3]
Quality of life (Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol versus calcium carbonate tablets and alfacalcidol) Follow-up: 3 months Scale from: 0 to 100	The mean quality of life in the control groups was **50.75**	The mean quality of life in the intervention groups was **5.3 higher** (3.67 to 6.93 higher)		80 (1 study)	⊕⊕◯◯ **low**[1,4]	MD 5.30 g/cm^3 (3.67 to 6.93) Absolute risk difference 5% (4% to 7%) Relative per cent change 10% (7% to 14%) NNT 2 (2 to 3)
Death	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome
Serious adverse events	See comment	See comment	Not estimable	0 (0)	See comment	No trial reported this outcome

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **MD:** mean difference; **NNT:** number needed to treat; **RR:** risk ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1]No information on adequate sequence generation and not all the outcomes that were of interest in this review were reported.
[2]The total population size is less than 300 (a threshold rule-of-thumb value).
[3]Five trials reported on the outcome of fracture incidence, but these trials were small in sample size, suffered from various biases, tested different Chinese herbal medicines and the results were not consistent.
[4]The total population size is less than 400 (a threshold rule-of-thumb value).

DISCUSSION

Due to poor study quality and limited data on the individual herbal interventions, no definitive conclusions can be drawn from this review on the effectiveness of any Chinese herbal medicine intervention tested to date.

Summary of main results

One hundred and eight randomised trials were included in this review. Ninety-nine different Chinese herbal medicines were compared with placebo, no intervention, conventional pharmaceutical medicine or with the same co-intervention received by the Chinese herbal medicines group. In this review, many of the trials showed a symptomatic benefit of Chinese herbal medicines in patients with osteoporosis either when compared with placebo, no intervention or conventional western medicine. However, there was a lack of replicable evidence because no more than one trial ever compared the same Chinese herbal medicine and control treatment. Thus, the finding of a benefit of Chinese herbal medicine treatment may not be conclusive. Furthermore, the findings of this review should be interpreted with caution due to the small sample sizes and generally low methodological quality of the included studies.

Compared with placebo in three trials, Chinese herbal medicines had a statistically significant effect in increasing bone mineral density (BMD) in each trial. One reported some mild adverse effects (such as stomach/intestinal upset, headache and dizziness) from Chinese herbal medicines, but there were no significant differences between the Chinese herbal medicines and placebo groups.

Five randomised trials compared seven different Chinese herbal medicines with no intervention. Two trials showed Chinese herbal medicines to be significantly effective in increasing BMD, while three others showed no better effect. Four trials reported mild adverse effects (e.g. mild stomach discomfort, intestinal upset, etc.) of Chinese herbal medicines, but this did not affect the continuation of the treatment.

Sixty-one trials compared 58 different Chinese herbal medicines with western medicine. Twenty-three trials showed that Chinese herbal medicines were significantly effective in increasing BMD, while 38 showed no better effect. Twenty-three reported some adverse effects (e.g. dizziness, rash, nausea, vomiting, etc.) from Chinese herbal medicines, but most of them did not affect the continuation of the treatment. Six reported no occurrence of adverse effects and 38 did not report adverse effects.

Forty-eight trials compared 42 different Chinese herbal medicines plus western medicine with western medicine. Twenty-six showed better effects in increasing BMD, while 22 did not. Fourteen reported some adverse symptoms (e.g. nausea, vomiting, etc.) from Chinese herbal medicines, but there was no significant difference between comparison groups. Eight reported no remarkable adverse effects and the other 26 did not report adverse effects.

Overall completeness and applicability of evidence

We performed this review to evaluate the benefit and harm of Chinese herbal medicines in patients with osteoporosis. Most of the Chinese herbal medicines evaluated were mixtures of different herbs and most of them were prescribed by the investigators without reporting of the quality standards for the preparations. Interpretation of these findings should therefore be cautious considering that along with the other methodological limitations in the study designs, these studies cannot be replicated. There is a risk that statistically significant findings from a handful of studies at questionable risk of bias are given more prominence than the lack of data for relevant endpoints available from the vast majority of included studies in the review.

The Chinese herbal medicines evaluated generally appeared to be safe. However, we cannot conclude that using Chinese herbal medicines in osteoporosis patients is safe, because adverse effects were not sufficiently and adequately reported in all the included trials. In clinical trials beneficial and harmful effects should receive equal attention, and the recording and reporting of adverse effects must improve if we are to draw any conclusions about safety.

Quality of the evidence

Due to the variations in the Chinese herbal medicines tested and the methodological limitations of the included trials, the evidence for Chinese herbal medicines for the treatment of osteoporosis is not conclusive. In general, Chinese herbal medicines might be a promising treatment. However, it is premature to recommend Chinese herbal medicines for routine use in osteoporosis considering the generally low quality of the evidence.

Most of the included trials suffered from insufficient reporting or inadequate methods of randomisation. The majority of the trials did not report how the random allocation was generated and concealed. Some trials had a significantly skewed distribution of participants among the groups compared which could not be explained if randomisation had been carried out properly. These trials were highly prone to selection bias.

Very few trials used a double-blinding method. The majority of treatment approaches in the included trials aimed to improve pain symptoms, which is a subjective indicator. If the outcome assessment is not blinded, then performance and detection bias may be a problem.

Most of the included trials were small. Although some data analyses did not demonstrate a statistically significant difference between the groups compared, the results were likely to have been underpowered to demonstrate equivalence. Therefore, the analyses from the small sample trials may not be able to establish with confidence that the two interventions had equivalent effects.

Overall the evidence is limited: potential bias may have occurred in the selection of participants, the administration of treatment

and the assessment of outcomes in the included trials, which may obscure or exaggerate treatment effects. Methodologically less rigorous trials have been shown to have significantly larger intervention effects than trials conducted with more rigour (Egger 2003; Moher 1998; Schulz 1995). Therefore, the implications of our findings for clinical practice are very limited.

The trials identified in this review were mostly Chinese and all were conducted in Chinese participants: publication bias might therefore be an issue. An empirical study has shown that Chinese trials are significantly affected by publication bias (Vickers 1998). Furthermore, it is certainly an issue that so few of the included studies actually reported the right outcomes and we downgraded studies for selective reporting. Accordingly, publication bias should be taken into consideration when interpreting the present findings. Moreover, most of the trials were of short duration and were not followed up long-term, thus they were unable to detect endpoint outcomes such as fracture or long-term adverse effects of the herbal treatments in patients with osteoporosis. Primary outcomes such as the occurrence of new fractures were reported in only a few trials, so we could not draw any conclusions about efficacy and safety.

Potential biases in the review process

In this review, we comprehensively searched for studies from appropriate databases, and selected trials and extracted data in duplicate. However, we did not find any unpublished studies or studies published in languages other than Chinese or English. Secondly, due to our limited resources, including time, we were not able to contact the original authors to verify unclear information, such as the methods used for random allocation generation and concealment. Furthermore, almost all Chinese herbal medicines in the included trials were tested only once and on small samples. This made it impossible for us to pool data to draw a robust conclusion.

Agreements and disagreements with other studies or reviews

We could not find any other reviews evaluating the benefits and harms of Chinese herbal medicines in patients with osteoporosis. Therefore, this review is the first time this has been reported. Many trials are not included in this review and are listed as excluded studies. Due to the variation among the Chinese herbal medicine interventions, it is not meaningful to compare the results from these excluded trials with those included in this review.

AUTHORS' CONCLUSIONS

Implications for practice

Based on this systematic review, some Chinese herbal medicines may have beneficial effects on the bone mineral density at anatomical sites in people with osteoporosis. However, a large number of the included studies have an uncertain risk of bias, there is a lack of relevant clinical endpoints in the available literature and the evidence is of low quality. Further rigorous studies are needed to demonstrate whether these effects are clinically meaningful and to detect other effects.

Implications for research

The potential benefit of Chinese herbal medicines as a treatment for osteoporosis needs to be further investigated by conducting high-quality trials to produce convincing evidence. Trials comparing Chinese herbal medicines with conventional pharmaceutical medicine should be designed rigorously. It would also be interesting to verify the additional benefits of Chinese herbal medicines when combined with conventional medicine versus the same medicine by itself. There are a wide range of therapeutic strategies in Traditional Chinese Medicine that address osteoporosis and the related Chinese medicine diagnosis of kidney deficiency. It would be useful for those with expertise in Chinese herbal medicine to group the herbal formulae by therapeutic strategy, so that the Chinese herbal medicines can be tested with reference to the therapeutic framework from which they were derived.

Outcome measures should include both clinical and surrogate outcomes. Standardised monitoring and reporting should be used for assessment of adverse effects. The methodological quality of randomised trials of Chinese herbal medicines for osteoporosis needs to be improved. The following aspects should be addressed: (i) detailed reporting of the methods used to generate the allocation sequence and conceal allocation; (ii) sufficient application of double-blinding with the use of an adequate placebo; (iii) clear descriptions of withdrawals/drop-outs during the trial and use of intention-to-treat analysis; (iv) reporting of clinically important outcome measures from long-term follow-up; and (v) reporting of the trial according to the CONSORT Statement guidelines (www.consort-statement.org).

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

An SJ 2000

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect and mechanism of kidney-tonifying herbs on postmenopausal osteoporosis Study design: double-blind, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 111 postmenopausal osteoporosis patients enrolled: 31 in Kanggusong granule group, 40 in ipriflavone group, 40 in Caltrate group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels recommended by WHO; BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Kanggusong granule, 12 g, twice daily, for 9 months Control 1: ipriflavone (200 mg, 3 times a day) and Caltrate (1 tablet per day), for 9 months Control 2: Caltrate (1 tablet per day), for 9 months
Outcomes	BMD, E2, Ca, P, ALP, fractures
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	It was described as double-blind but did not describe who was blinded
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Cao GY 2010

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect of integrated traditional Chinese and western medicine on primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 57 primary osteoporosis patients enrolled: 30 in trial group, 27 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis based on bone density levels Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Chinese medicine Bushenhuoxue recipe (1 dose per day, water fried) and conventional western medicine (alfacalcidol soft capsules, bisphosphonate and salmon calcitonin, etc.) based on the patient's condition, for 3 months Control: conventional western medicine based on the patient's condition, for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No detailed description and P value for the baseline comparison not stated

Cao W 2010

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect of integrated traditional Chinese and western medicine on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 postmenopausal osteoporosis patients enrolled: 60 in trial group, 60 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis based on bone density levels Exclusion criteria: serious women's illnesses, malignant tumour, diabetes, etc
Interventions	Experimental: Chinese medicine (combinations of herbs) (1 dose per day, water fried 300 ml, twice a day), tamoxifen (20 mg per day) and Caltrate (600 mg, 1 to 2 tablets per day), for 3 months Control: tamoxifen (20 mg per day) and Caltrate (600 mg, 1 to 2 tablets per day), for 3 months
Outcomes	BMD, Ca, ALP, adverse events
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Chen FS 2001

Methods	Country: China Setting: outpatients and inpatients Aim: to observe the therapeutic effect of integrated traditional Chinese and western medicine on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 64 postmenopausal osteoporosis patients enrolled: 32 in trial group, 32 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Gushen decoction (1 dose per day), Caltrate (600 mg per day) and Alfacalcidol (0.25 μg per day), for 24 weeks Control: Caltrate (600 mg per day) and Alfacalcidol (0.25 μg per day), for 24 weeks
Outcomes	BMD, E2, Ca, P, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Chen JP 1999

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Gukang oral liquid on postmenopausal osteoporosis Study design: single-blind, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 61 postmenopausal osteoporosis patients enrolled: 36 in trial group, 25 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by single photon absorptiometry (SPA) Exclusion criteria: secondary osteoporosis, etc.
Interventions	Experimental: Gukang oral liquid (a basic herbal compound), 10 ml, 3 times a day, for 6 months Control: Tridin, 1 tablet, 3 times a day, for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind but did not describe who was blinded
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Chen NQ 2006

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Shenyao capsules on primary osteoporosis Study design: single-blind, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 100 primary osteoporosis patients enrolled: 50 in trial group, 50 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: secondary osteoporosis, endocrine disease
Interventions	Experimental: Shenyao capsules (2 capsules, 3 times a day) for 6 months Control: Caltrate (600 mg, once a day), for 6 months
Outcomes	BMD, Ca, P, ALP, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind but did not describe who was blinded
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No detailed description and P value for baseline comparison not stated

Chen X 2008

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect of Gukang decoction on primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: China 83 primary osteoporosis patients enrolled: 42 in trial group, 41 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Gukang decoction, 1 dose per day, for 4 months Control: alendronate sodium tablets, 10 mg, once a day, for 4 months
Outcomes	BMD, E2, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	High risk	Sequence generated by some rule based on clinic time
Allocation concealment	High risk	Allocation based on clinic time
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Chen XL 2010

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Heche Dazao pill on primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 114 primary osteoporosis patients enrolled: 57 in trial group, 57 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: liver or kidney disease, endocrine diseases, etc
Interventions	Experimental: Heche Dazao pill (1 dose per day, water fried twice, twice a day) and Gaitianli (300 mg, 3 times a day), for 3 months Control: Gaitianli (300 mg, 3 times a day), for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Chen YQ 2001

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Jiarong tablet on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 61 postmenopausal osteoporosis patients enrolled: 20 in trial group, 20 in Livial group, 21 in Caltrate group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Jiarong tablet (5 g, 3 times a day) and Caltrate (1 tablet per day), for 6 months Control: Livial (2.5 mg, every other day) and Caltrate (1 tablet per day), or Caltrate (1 tablet per day), for 6 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline comparison

Chen ZX 2002

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect of Gushukang granule on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 62 postmenopausal osteoporosis patients enrolled: 23 in Gushukang granule and Calcium carbonate with vitamin D chewable tablets group, 20 in Gushukang granule group, 19 in Calcium carbonate with vitamin D chewable tablets group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels recommended by WHO, BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Gushukang granule (10 g, twice a day) and Calcium carbonate with vitamin D chewable tablets (1 tablet, twice a day), or Gushukang granule (10 g, twice a day), for 6 months Control: Calcium carbonate with vitamin D chewable tablets, 1 tablet, twice a day, for 6 months
Outcomes	BMD, Ca, P, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers table
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Cui TH 1999

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect of Strong Bone capsule on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 105 postmenopausal osteoporosis patients enrolled: 74 in trial group, 31 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels recommended by WHO; BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Strong Bone capsule (a basic herbal compound), 5 capsules, 3 times a day, for 3 months Control: Caltrate, 1 tablet per day, for 3 months
Outcomes	BMD, E2, Ca, P, ALP, BGP, CT, adverse effects
Notes	The study was supported by administration of traditional Chinese medicine scientific research funds in Jiangsu Province, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline comparison

Dai Y 2007

Methods	Country: China Setting: hospital based Aim: to observe the therapeutic effect of Migu tablet on BMD, OPG, etc. in patients with postmenopausal osteoporosis Study design: randomised controlled trial Analysis: analysis of variance (F-test) Loss to follow-up: not reported
Participants	Ethnicity: Chinese 160 postmenopausal osteoporosis patients enrolled: 54 in Migu tablet trial group, 53 in Xianlinggubao group, 53 in compound calcium amino acid chelate capsules group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism, endocrine diseases, etc
Interventions	Experimental: Migu tablet group: Migu tablet, 1 tablet, 3 times a day and compound calcium amino acid chelate capsule, 1 g, once a day; for 24 weeks Xianlinggubao group: Xianlinggubao capsule, 0.5, g 3 times a day and compound calcium amino acid chelate capsule, 1 g, once a day, for 24 weeks Control: compound calcium amino acid chelate capsule, 1 g, once a day, for 24 weeks
Outcomes	BMD
Notes	The study was supported by a health department funded project in Hubei Province, but no declarations of interest for the primary researchers was reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline comparison

Deng WM 2012

Methods	Country: China Setting: hospital based Aim: to observe the kidney-tonifying herbal Fufangs with phytoestrogenic Epimedium for prevention of postmenopausal osteoporosis with both BMD and fracture as study endpoints Study design: a multicentre, double-blind, randomised controlled trial Analysis: F-test, Chi^2 test based on the intention-to-treat (ITT) principle Loss to follow-up: 5-year follow-up. At the end of 5 years, 155 participants had completed the study (13 drop-outs in the treatment group, 26 drop-outs in the control group); the difference in drop-out rate was statistically significant between the 2 groups ($P < 0.05$)
Participants	Ethnicity: Chinese 194 postmenopausal osteoporosis patients enrolled: 101 in experimental group, 93 in placebo group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: those who used any kind of anti-osteoporosis drugs or had been under HRT during the past year; current medical disease(s) associated with potential development of metabolic bone diseases, including Paget disease, osteomalacia, bone marrow disease, hereditary disorders of calcium or mineral metabolism, adrenal disorders, poorly controlled diabetes mellitus, severe connective tissue disorders, gastrointestinal diseases and current or past history of clinically significant haematological, endocrinological, cardiovascular, renal, hepatic, gastrointestinal, psychiatric or neurological diseases
Interventions	Experimental: Bushen Zhuanggu granules (10 g per day, twice per day), plus calcium (600 mg) and vitamin D (400 IU) Control: placebo granules (10 g per day, twice per day), plus calcium (600 mg) and vitamin D (400 IU)
Outcomes	BMD, fracture, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported

Deng WM 2012 (*Continued*)

Free of other bias	Unclear risk	No information on baseline comparison

Dong Y 2010

Methods	Country: China Setting: outpatients Aim: to evaluate the efficacy and safety of salmon calcitonin plus Xianlinggubao for osteoporosis and ostealgia in postmenopausal women Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 160 postmenopausal osteoporosis patients enrolled: 54 in Xianlinggubao plus salmon calcitonin group, 53 in Xianlinggubao group, 53 in salmon calcitonin control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism, endocrine diseases, secondary osteoporosis, liver or kidney disease, etc
Interventions	Experimental: Xianlinggubao plus salmon calcitonin group: Xianlinggubao (1.5 g, twice a day), salmon calcitonin (500 IU, once a day) and Caltrate (1 tablet per day), for 3 months Xianlinggubao group: Xianlinggubao (1.5 g, twice a day) and Caltrate (1 tablet per day) , for 3 months Control: salmon calcitonin (500 IU, once a day) and Caltrate (1 tablet per day), for 3 months
Outcomes	BMD, ALP, BGP, Ca, P, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported

Dong Y 2010 (*Continued*)

Free of other bias	Low risk	The study appears to be free of other sources of bias

Dong YF 2004

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of traditional Chinese herbs on primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 senile osteoporosis patients enrolled: 40 in trial group, 40 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine diseases, secondary osteoporosis, etc
Interventions	Experimental: traditional Chinese herbs (Longspur Epimedium, etc.), 1 dose per day, for 6 months Control: vitamin D (10000 U, once a day), Caltrate (600 mg, once a day), for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Fan HX 2004

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Gengnian Anyi tablet on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 22 in herb trial group, 18 in nilestriol control group, 20 in Caltrate group Inclusion criteria: international diagnostic criteria for osteoporosis, BMD detected by SPA Exclusion criteria: endocrine diseases, etc.
Interventions	Experimental: Gengnian Anyi tablet (6 tablets, 3 times a day) and Caltrate (1 tablet per day), for 6 months Control: nilestriol (2 mg, once a half month) and Caltrate (1 tablet per day), or Caltrate (1 tablet per day), for 6 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline comparison

Gang PH 2001

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Gumiling granule on primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 25 primary osteoporosis patients enrolled: 15 in herb trial group, 10 in control group Inclusion criteria: BMD, detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease, etc
Interventions	Experimental: Gumiling granule (10 g, 3 times a day), for 6 months Control: bicarbonate calcium chewable(1 g, twice a day), for 6 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline comparison

Gong L 2001

Methods	Country: China Setting: outpatients Aim: to observe the therapeutic effect of Yishen Zhuanggu mixture on primary osteoporosis Study design: randomised controlled trial Analysis: T-test, F-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 primary osteoporosis patients enrolled: 46 in herb trial group, 17 in herb control group, 17 in blank control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases, etc.
Interventions	Experimental: Yishen Zhuanggu mixture (25 ml, twice a day) in herb trial group, Shengu capsule (2 capsules, 3 times a day) in herb control group, for 6 months Control: blank
Outcomes	BMD, BGP, adverse effects
Notes	The study was supported by a Science and Technology Commission funded project in Beijing, but no declarations of interest of the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Guo JH 2008

Methods	Country: China Setting: outpatients Aim: to explore the effect of Bushen Kangsong pill on BMD in postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 84 postmenopausal osteoporosis patients enrolled: 42 in trial group, 42 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism, liver or kidney disease, etc
Interventions	Experimental: Bushen Kangsong pill, 3 g, 3 times a day, calcium carbonate, 4 tablets, 3 times a day, for 6 months Control: calcium carbonate, 4 tablets, 3 times a day, for 6 months
Outcomes	BMD
Notes	The study was supported by the Science Foundation for Post-doctoral Scientists of Jiangsu Province, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Han XL 2007

Methods	Country: China Setting: outpatients and inpatients Aim: to explore the effect of Shugan Zishen Huoxue tang on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 42 postmenopausal osteoporosis patients enrolled: 25 in herb trial group, 17 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases, etc.
Interventions	Experimental: Shugan Zishen Huoxue tang (100 ml, twice a day), Caltrate (1.2 g, twice a day) and alendronate sodium (10 mg, once a day), for 6 months Control: Caltrate (1.2 g, twice a day) and alendronate sodium tablets (10 mg, once a day), for 6 months
Outcomes	BMD, E2
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

He MT 2007

Methods	Country: China Setting: outpatients Aim: to explore the effect of Bushen Jianpi Huoxue recipe on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 160 postmenoporosis patients enrolled: 80 in herb trial group, 80 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases, fractures, metabolic disease, etc
Interventions	Experimental: Bushen Jianpi Huoxue recipe (1 dose per day), for 6 months Control: alendronate sodium tablets (70 mg per week), for 6 months
Outcomes	BMD, IL-6, BGP, ALP, E2
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

He N 2006

Methods	Country: China Setting: hospital based Aim: to explore the effect of Jiawei Zhuangyao Jianshen tang on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 58 postmenopausal osteoporosis patients enrolled: 29 in trial group, 29 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Jiawei Zhuangyao Jianshen tang (1 dose per day) for 3 months Control: compound calcium amino acid chelate capsules (1 g, once a day), for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

He XQ 2006

Methods	Country: China Setting: outpatients and inpatients Aim: to explore the effect of Bushen Yangxue tang on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 32 in trial group, 28 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine disease, liver or kidney disease
Interventions	Experimental: Bushen Yangxue tang (1 dose per day) and Caltrate (once a day), for 6 months Control: Caltrate (once a day), for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Hu J 2012

Methods	Country: China Setting: inpatients Aim: to explore the effect of Shangke Yishen Zhuanggu pill on primary osteoporosis Study design: randomised controlled trial Analysis: T-test, F-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 300 primary osteoporosis patients enrolled: 155 in trial group, 145 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis Exclusion criteria: not mentioned
Interventions	Experimental: Shangke Yishen Zhuanggu pill (6 g, 3 times a day), Caltrate (1.2 g, twice a day), and miacalcic ampoule (50 U, 3 times a day, intramuscular injection), for 3 months Control: Caltrate (1.2 g, twice a day), and miacalcic ampoule (50 U, 3 times a day, intramuscular injection), for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Huang JW 2008

Methods	Country: China Setting: hospital based Aim: to explore the effect of Erxian Yanggu decoction on postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 67 postmenopausal osteoporosis patients enrolled: 34 in trial group, 33 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases, secondary osteoporosis, patients with uterine/ breast disease
Interventions	Experimental: Erxian Yanggu decoction, 1 dose per day, alendronate sodium tablets, 70 mg per week, for 6 months Control: alendronate sodium tablets, 70 mg per week, for 6 months
Outcomes	IL-6
Notes	The study was supported by administration of traditional Chinese medicine scientific research funds in Zhejiang Province, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Huang ZJ 2008

Methods	Country: China Setting: hospital based Aim: to study the effects of Zishen Gukang pill in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA, DPA, SPA, etc Exclusion criteria: disease-affected bone metabolism, etc.
Interventions	Experimental: Zishen Gukang pill (6 g, 3 times a day) Control: Caltrate (2 pills, once a day), for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	High risk	Sequence generated by some rule based on clinic time
Allocation concealment	High risk	Allocation based on clinic time
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Jian QQ 2010

Methods	Country: China Setting: inpatients Aim: to study the effects of Shengsuiyin recipe in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 144 postmenopausal osteoporosis patients enrolled: 73 in trial group, 71 in control group Inclusion criteria: diagnostic criteria for osteoporosis on Obstetrics and Gynecology in Chinese Medicine Exclusion criteria: not mentioned
Interventions	Experimental: Shengsuiyin recipe (1 dose per day, water fried) and Caltrate (750 mg, once a day), for 12 months Control: Caltrate, 750 mg, once a day, for 12 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Lan ZX 2006

Methods	Country: China Setting: hospital based Aim: to study the effects of Guli powder in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 primary osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism
Interventions	Experimental: Guli powder (10 g, 3 times a day), for 3 months Control: Caltrate (once a day), for 3 months
Outcomes	BMD, Ca, P, ALP
Notes	The study was supported by administration of traditional Chinese medicine scientific research funds in Sichuan Province, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Li BL 2007

Methods	Country: China Setting: hospital based Aim: to observe the mechanism of Jianshen decoction in treating patients with postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine diseases, disease-affected bone metabolism
Interventions	Experimental: Jianshen decoction, 1 dose per day, for 6 months Control: alendronate sodium tablets, 10 mg, once a day, for 6 months
Outcomes	BMD, ALP, BGP, E2, IL-6
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Li HW 2004

Methods	Country: China Setting: hospital based Aim: to study the effects of Ziyin Bushen Zhuanggu prescription in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 45 postmenopausal osteoporosis patients enrolled: 25 in trial group, 20 in control group Inclusion criteria: international diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine diseases, etc
Interventions	Experimental: Ziyin Bushen Zhuanggu prescription (1 dose per day), Caltrate (1.2 g, twice a day) and miacalcin (50 IU, injection, twice per week), for 8 months Control: Caltrate (1.2 g, twice a day) and miacalcin (50 IU, injection, twice a week), for 8 months
Outcomes	BMD, E2
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Li SL 2004

Methods	Country: China Setting: hospital based Aim: to study the effects of Zhuanggu capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases, etc
Interventions	Experimental: Zhuanggu capsule (4 capsules, 3 times a day) and Caltrate (600 mg, once a day), for 6 months Control: Caltrate (600 mg, once a day), for 6 months
Outcomes	BMD, E2, Ca, P, ALP, BGP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Li YH 2008

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Jingujian granule in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 senile osteoporosis patients enrolled: 80 in trial group, 40 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels recommended by WHO Exclusion criteria: secondary osteoporosis, liver or kidney disease
Interventions	Experimental: Jingujian granule, 8 g, twice a day, for 3 months Control: Caltrate, 600 mg, once a day, for 3 months
Outcomes	BMD, ALP, BGP, adverse effects
Notes	The study was supported by a China academy of traditional Chinese medicine advantage diseases research project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Li YH 2010

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Jingujian granule 1, 2 or 3 in the treatment of primary osteoporosis based on epigastralgia traditional Chinese medicine Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: 30 drop-outs (11 in trial group, 19 in control group) were not included in the analysis
Participants	Ethnicity: Chinese 210 primary osteoporosis patients enrolled: 140 in trial group (11 drop-outs), 70 in control group (19 drop-outs) Inclusion criteria: Chinese diagnostic criteria for osteoporosis and guiding principles for clinical research on new drugs in traditional Chinese medicine, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease, etc
Interventions	Experimental: Jingujian granule 1, 2 or 3 based on epigastralgia traditional Chinese medicine (kidney deficiency; spleen and kidney deficiency; spleen and kidney deficiency, and blood stasis), 8 g, twice a day, for 3 months Control: Caltrate, 600 mg, once a day, for 3 months
Outcomes	BMD, ALP, E2, CT, BGP, adverse events
Notes	The study was supported by a China academy of traditional Chinese medicine advantage diseases research project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Li ZP 2011

Methods	Country: China Setting: hospital based Aim: to study the effects of Kanggusong soup in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 75 postmenopausal osteoporosis patients enrolled: 45 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: secondary osteoporosis, endocrine disease, liver or kidney disease, etc
Interventions	Experimental: Kanggusong soup (1 dose per day, twice a day) and Caltrate (1 tablet per night), for 3 months Control: Caltrate (1 tablet per night), for 3 months
Outcomes	ALP, IL-6, fractures
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Li ZY 2006

Methods	Country: China Setting: hospital based Aim: to study the effects of Xianling Gusong capsules in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 43 postmenopausal osteoporosis patients enrolled: 21 in trial group, 22 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease
Interventions	Experimental: Xianling Gusong capsules (4 capsules, 3 times a day), for 6 months Control: Caltrate (1 pill, twice a day), for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Liang DB 2012

Methods	Country: China Setting: hospital based Aim: to study the effects of Bushenhuoxue therapy in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 primary osteoporosis patients enrolled: 40 in trial group, 40 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: secondary osteoporosis, liver or kidney disease, etc
Interventions	Experimental: Bushenhuoxue therapy (1 dose, per day), calcium carbonate tablets (1 tablet (0.5 g), twice a day), and alfacalcidol (1 tablet (0.5 μg) per day), for 3 months Control: calcium carbonate tablets (1 tablet (0.5 g), twice a day), and alfacalcidol (1 tablet (0.5 μg) per day), for 3 months
Outcomes	BMD, quality of life, adverse events
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	No information provided
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Liao L 2004

Methods	Country: China Setting: hospital based Aim: to study the effects of Bushen Shengsui principle in the treatment of post-menopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 100 postmenopausal osteoporosis patients enrolled: 32 in herb trial group, 39 in control group, 29 in blank group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine diseases, etc.
Interventions	Experimental: Bushen Shengsui principle, 1 dose per day, for 6 months Control: Premarin (1 tablet per day) and medroxyprogesterone (2.5 mg per day), or blank, for 6 months
Outcomes	BMD, E2, adverse effects
Notes	The study was supported by a science and technology planning project Zhongshan, Guangdong Province, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Lin W 2000

Methods	Country: China Setting: hospital based Aim: to study the effects of Migu decoction in the treatment of postmenopausal osteoporosis Study design: double-blind, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 20 postmenopausal osteoporosis patients enrolled: 13 in trial group, 7 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases
Interventions	Experimental: Migu decoction, for 4 months Control: placebo, for 4 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Ling JY 2008

Methods	Country: China Setting: outpatients Aim: to study the effects of Bushen Zhuanggu decoction in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 primary osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine diseases, liver or kidney disease, etc
Interventions	Experimental: Bushen Zhuanggu decoction, 1 dose per day, for 3 months Control: alendronate sodium tablets, 10 mg, once a day, for 3 months
Outcomes	BMD, E2, ALP, P
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Liu JM 2012

Methods	Country: China Setting: outpatients Aim: to study the effects of Gukang tablet in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 primary osteoporosis patients enrolled: 40 in trial group, 40 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: endocrine diseases, liver or kidney disease, etc
Interventions	Experimental: Gukang tablet (0.5 g per tablet, 6, 3 times a day), Gaitianli tablets (50 mg per tablet, 2 tablets, 3 times a day) and vitamin A and D capsules (1 pill, twice a day), for 3 months Control: Gaitianli tablets (50 mg per tablet, 2 tablets, 3 times a day), and vitamin A and D capsules (1 pill, twice a day), for 3 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Lv ZH 2002

Methods	Country: China Setting: hospital based Aim: to study the effects of Jiawei Bushen Zhuangjintang in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 90 primary osteoporosis patients enrolled: 48 in trial group, 42 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Jiawei Bushen Zhuangjintang, 1 dose per day, for 3 months Control: calcium granule, 5 g, 3 times a day, for 3 months
Outcomes	BMD
Notes	The study was supported by administration of traditional Chinese medicine scientific research funds in Guangdong Province, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Ma C 2011

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Liuwei Dihuang pills in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: F-test, Chi^2 test Loss to follow-up: 1 drop-out in Liuwei Dihuang pills group was not included in the analysis
Participants	Ethnicity: Chinese 108 postmenopausal osteoporosis patients enrolled: 36 in Liuwei Dihuang pills group, 36 in Caltrate group, 36 in Liuwei Dihuang pills plus Caltrate group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine diseases, etc.
Interventions	Liuwei Dihuang pills group: Liuwei Dihuang pills, 8 pills, 3 times a day, for 6 months Caltrate group: Caltrate, 1 tablet, 3 times a day, for 6 months Liuwei Dihuang pills plus Caltrate group: Liuwei Dihuang pills (8 pills, 3 times a day) and Caltrate (1 tablet, 3 times a day), for 6 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Ma CZ 2011

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Yiyuanjiangu decoction in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 primary osteoporosis patients enrolled: 60 in trial group, 60 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: endocrine diseases, liver or kidney disease, etc
Interventions	Experimental: Yiyuanjiangu decoction (1 dose per day), Miacalcin ampoule (50 U, once a day, intramuscular), and calcium carbonate tablet (1 tablet (0.75 g), twice a day), for 3 months Control: Miacalcin ampoule (50 U, once a day, intramuscular) and calcium carbonate tablet (1 tablet (0.75 g), twice a day), for 3 months
Outcomes	BMD, ALP, Ca, P
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Ma YJ 2011

Methods	Country: China Setting: outpatients Aim: to study the effects of Yishen Zhuanggu decoction in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 100 senile osteoporosis enrolled: 50 in trial group, 50 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: secondary osteoporosis, endocrine diseases, liver or kidney disease, etc
Interventions	Experimental: Yishen Zhuanggu decoction (1 dose per day) and calcitriol soft capsule (0.25 mg, twice a day), for 3 months Control: calcitriol soft capsule (0.25 mg, twice a day), for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Mao YF 2011

Methods	Country: China Setting: outpatients Aim: to study the effects of Bushen Jianpi Jingu decoction in the treatment of postmenopausal osteoporosis Study design: single-blind, randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 75 postmenopausal osteoporosis patients enrolled: 39 in trial group, 36 in control group Inclusion criteria: diagnostic criteria for osteoporosis recommend by WHO, BMD detected by DXA Exclusion criteria: liver or kidney disease, disease-affected bone metabolism, etc
Interventions	Experimental: Bushen Jianpi Jingu decoction, 1 dose per day, for 3 months Control: Miacalcin ampoule (50 U), for 3 months
Outcomes	BGP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Single-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Unclear risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Meng XD 2003

Methods	Country: China Setting: hospital based Aim: to study the effects of Gujian capsule in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 68 primary osteoporosis patients enrolled: 35 in trial group (1 drop-out), 33 in control group (2 drop-out) Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease, etc
Interventions	Experimental: Gujian capsule (2 capsules, 3 times a day), for 6 months Control: alfacalcidol (0.5 μg, twice a day), for 6 months
Outcomes	BMD, PTH, CT, E2, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Miu JQ 2008

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of a traditional Chinese medicine capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 90 postmenopausal osteoporosis patients enrolled: 60 in trial group, 30 in control group Inclusion criteria: diagnostic criteria for osteoporosis recommend by WHO, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease
Interventions	Experimental: traditional Chinese medicine capsule (300 mg per pill, 5 pills per day), calcium gluconate, 2 g, 3 times a day, for 9 months Control: calcium gluconate, 2 g, 3 times a day, for 9 months
Outcomes	BGP, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Mu G 2001

Methods	Country: China Setting: outpatients Aim: to study the effects of Bushen Qiangshen pill in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 40 postmenopausal osteoporosis patients enrolled: 20 in trial group, 20 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by CUBA ultrasound absorptiometry Exclusion criteria: endocrine diseases, secondary osteoporosis
Interventions	Experimental: Bushen Qiangshen pill (1 pill, twice a day) and Caltrate (1 tablet, twice a day), for 12 weeks Control: Caltrate, 1 tablet, twice a day, for 12 weeks
Outcomes	E2, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Mu G 2001a

Methods	Country: China Setting: outpatients Aim: to study the effects of Bushen Qiangshen pill in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 30 postmenopausal osteoporosis patients enrolled: 15 in trial group, 15 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by CUBA ultrasound absorptiometry Exclusion criteria: endocrine diseases, secondary osteoporosis
Interventions	Experimental: Bushen Qiangshen pill, 1 pill, twice a day, for 12 weeks Control: Caltrate, 1 tablet, twice a day, for 12 weeks
Outcomes	E2, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Ou L 2011

Methods	Country: China Setting: hospital based Aim: to study the effects of Radix rehmanniae preparata, Radix astragali, etc. in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 64 postmenopausal osteoporosis patients enrolled: 32 in trial group, 32 in control group Inclusion criteria: Chinese and WHO diagnostic criteria for osteoporosis Exclusion criteria: not mentioned
Interventions	Experimental: Radix rehmanniae preparata, Radix astragali, etc. (1 dose per day), for 6 months Control:calcium carbonate tablets (600 mg per day, once a day), for 6 months
Outcomes	BMD, E2, ALP, Ca, P, PTH, CT
Notes	The study was supported by Shanxi Provincial Department of Education project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Peng T 2002

Methods	Country: China Setting: hospital based Aim: to study the effects of Qianggu soft extract in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 118 postmenopausal osteoporosis patients enrolled: 78 in trial group, 21 in calcium gluconate oral group, 19 in blank control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases
Interventions	Experimental: Qianggu soft extract, 20 ml, 3 times a day, for 6 months Control: calcium gluconate (500 mg, 3 times a day), or blank, for 6 months
Outcomes	BMD, E2, Ca, ALP, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Qi ZX 1998

Methods	Country: China Setting: hospital based Aim: to study the effects of Bushen Qianggutang in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 40 primary osteoporosis patients enrolled: 20 in trial group, 20 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Bushen Qianggutang, 1 dose per day, fried, for 3 months Control: Caltrate, 600 mg, twice a day, for 3 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Qiu RB 2004

Methods	Country: China Setting: hospital based Aim: to study the effects of Yanghuo Sanzi tang in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Yanghuo Sanzi tang, 150 ml, twice a day, for 6 months Control: Caltrate, 2 tablets per day, for 6 months
Outcomes	BMD, E2, BGP, IL-6
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Qiu RB 2008

Methods	Country: China Setting: outpatients Aim: to study the effects of Jiangu prescription in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 postmenopausal osteoporosis enrolled: 60 in trial group, 60 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine disease, liver or kidney disease, disease-affected bone metabolism, etc
Interventions	Experimental: Jiangu prescription, 1 dose per day, for 6 months Control: alendronate sodium tablets, 10 mg, once a day, for 6 months
Outcomes	BMD, BGP, E2, IL-6
Notes	The study was supported by a Shenzhen science and technology planning project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Qiu ZX 2010

Methods	Country: China Setting: inpatients Aim: to study the effects of Xianlinggubao capsule in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 136 senile osteoporosis patients enrolled: 67 in trial group, 69 in control group Inclusion criteria: BMD Exclusion criteria: other diseases
Interventions	Experimental: Xianlinggubao capsule (1 g, 3 times a day) and Caltrate (1 tablet, twice a day), for 12 months Control: Caltrate, 1 tablet, twice a day, for 12 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No detailed description of diagnostic standard and P value for the baseline comparison not stated

Ruan XY 2006

Methods	Country: China Setting: outpatients Aim: to study the effects of Qianggu capsules in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 150 postmenopausal osteoporosis or osteopenia patients enrolled: 50 in herbal trial and hormone group, 50 in herbal group, 50 in hormone group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine disease, digestion disease, mental disorder, etc
Interventions	Experimental: Qianggu capsules (1 capsule, 3 times a day) and oestradiol valerate (0.5 to 1.5 mg, once a day), for 24 weeks; Qianggu capsules (1 capsule, 3 times a day), for 24 weeks Control: oestradiol valerate (0.5 to 1.5 mg, once a day), for 24 weeks
Outcomes	BMD, adverse effects
Notes	The study was supported by Beijing administration of traditional Chinese medicine scientific research funds and Capital Foundation of Medical Developments Project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Shao M 2003

Methods	Country: China Setting: hospital based Aim: to study the effects of Gukang oral liquid in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, etc.
Interventions	Experimental: Gukang oral liquid, 10 ml, 3 times a day, for 6 months Control: alendronate, 1 tablet per day, for 6 months
Outcomes	BMD, E2, ALP, BGP, IL-6
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Shi CD 2012

Methods	Country: China Setting: outpatients Aim: to study the effects of Kangshu Jiangu granule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 76 postmenopausal osteoporosis patients enrolled: 40 in trial group, 36 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: liver or kidney disease, endocrine disease, etc
Interventions	Experimental: Kangshu Jiangu granule, 4 g, 3 times a day, for 6 months Control: Caltrate, 1 tablet, once a day, for 6 months
Outcomes	BMD
Notes	The study was supported by Shanxi Provincial Department of traditional Chinese medicine (TCM) modernisation research plan, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Song XW 2000

Methods	Country: China Setting: hospital based Aim: to study the effects of kidney-tonifying herbs in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 68 postmenopausal osteoporosis patients enrolled: 23 in herb group, 23 in nilestriol group, 22 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: kidney-tonifying herbs, twice a day, for 6 months Control: nilestriol, 0.2 mg, twice per month; or calcium, 400 mg/d, for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Tang ZA 2012

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Bushen Qianggu Huoxue therapy in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 82 postmenopausal osteoporosis patients enrolled: 42 in trial group, 40 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis Exclusion criteria: liver or kidney disease, endocrine disease, metabolic disease, etc
Interventions	Experimental: Bushen Qianggu Huoxue therapy (1 dose per day), calcium (1000 mg per day) and cod liver oil (1 pill per day), for 3 months Control: calcium (1000 mg per day) and cod liver oil (1 pill per day), for 3 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wang CC 2005

Methods	Country: China Setting: hospital based Aim: to study the effects of Gumikang capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 postmenopausal osteoporosis patients enrolled: 32 in trial group, 28 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: metabolic disease, endocrine disease
Interventions	Experimental: Gumikang capsule, 5 capsules, twice a day, for 6 months Control: calcium gluconate, 500 mg, 3 times a day, for 6 months
Outcomes	BMD, E2, Ca, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wang H 2007

Methods	Country: China Setting: hospital based Aim: to study the effects of Qianggu paste II in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 123 senile osteoporosis patients enrolled: 75 in trial group, 48 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism
Interventions	Experimental: Qianggu paste II (3.0 g, 3 times a day, for 6 months) Control: calcium gluconate (500 mg, 3 times a day, for 6 months)
Outcomes	BMD, E2, ALP, Ca, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wang J 2007

Methods	Country: China Setting: hospital based Aim: to study the effects of Qianggu capsule in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 54 postmenopausal osteoporosis patients enrolled: 28 in trial group, 26 in control group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism
Interventions	Experimental: Qianggu capsule, 0.25 g, 3 times a day, for 6 months Control: alfa calcidiol capsule, 0.5 μg, twice a day, for 6 months
Outcomes	BMD, Ca, P, ALP, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wang JM 2008

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Gukang oral liquid in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 70 postmenopausal osteoporosis patients enrolled: 32 in trial group, 34 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism, secondary osteoporosis
Interventions	Experimental: Gukang oral liquid,10 ml, 3 times a day, for 6 months Control: alendronate sodium tablets, 10 mg, once a day, for 6 months
Outcomes	ALP, Ca, E2
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Wang SW 2003

Methods	Country: China Setting: hospital based Aim: to study the effects of Antai capsule in the treatment of postmenopausal osteoporosis Study design: double-blind, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 168 postmenopausal osteoporosis patients enrolled: 65 in herbal group, 60 in ipriflavone group, 63 in Caltrate group Inclusion criteria: WHO diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine disease
Interventions	Experimental: Antai capsule (3 capsules, 3 times a day) and Caltrate (1 tablet per day), for 6 months Control: ipriflavone (200 mg, 3 times a day) and Caltrate (1 tablet per day), or Caltrate (1 tablet per day), for 6 months
Outcomes	BMD, E2, Ca, P, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Wang XD 2011

Methods	Country: China Setting: hospital based Aim: to study the effects of Hugu capsule in the treatment of postmenopausal osteoporosis Study design: double-blind, placebo-controlled, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 122 postmenopausal osteoporosis patients enrolled: 61 in trial group, 61 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: bone metabolic disease, endocrine disease, etc
Interventions	Experimental: Hugu capsule (4 capsules, 3 times a day) and Caltrate (1 tablet per day), for 6 months Control: placebo capsule (4 capsules, 3 times a day) and Caltrate (1 tablet per day), for 6 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Patients were randomly allocated
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Wang XY 2000

Methods	Country: China Setting: hospital based Aim: to study the effects of Bushen Yigu soft extract in the treatment of osteoporosis Study design: single-blind, placebo-controlled, randomised controlled trial Analysis: F-test, T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 96 osteoporosis patients enrolled: 37 in herbal group, 37 in Alfacalcidol group, 22 in placebo group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by SPA Exclusion criteria: endocrine disease
Interventions	Experimental: Bushen Yigu soft extract, 20 ml, twice a day, for 3 months Control: Alfacalcidol, 0.25 mg per day, or placebo, for 3 months
Outcomes	BMD, E2
Notes	The study was supported by a national department of traditional Chinese medicine (TCM) modernisation research project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wang YZ 2008

Methods	Country: China Setting: outpatients Aim: to study the effects of Jiangu capsule in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 125 primary osteoporosis patients enrolled: 63 in trial group, 62 in control group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: secondary osteoporosis, metabolic disease, etc
Interventions	Experimental: Jiangu capsule, 9 g, 3 times a day, for 12 months Control: Caltrate, 1 tablet per day, for 12 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Wang ZK 2004

Methods	Country: China Setting: hospital based Aim: to study the effects of Bushen Jianpi Migu prescription in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 150 senile osteoporosis patients enrolled: 83 in trial group, 67 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine disease, secondary osteoporosis
Interventions	Experimental: Bushen Jianpi Migu prescription, 1 dose per day, for 3 months Control: Caltrate, 1 tablet, twice a day, for 3 months
Outcomes	BMD, Ca, P, ALP, BMC
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Drawing of lots
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Wei RY 2011

Methods	Country: China Setting: hospital based Aim: to study the effects of Kanggusong capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 postmenopausal osteoporosis patients enrolled: 48 in trial group, 32 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, the Chinese diagnostic criteria for primary osteoporosis Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Kanggusong capsule, 3, 3 times a day, for 6 months Control: Caltrate, 1 tablet each night, for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wu JZ 2010

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Erxian soup in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: F-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 58 primary osteoporosis patients with deficiency of liver and kidney enrolled: 30 in trial group, 28 in control group Inclusion criteria: the Chinese diagnostic criteria for primary osteoporosis and guiding principles for clinical research on new drugs in traditional Chinese medicine Exclusion criteria: bone metabolic disease, endocrine disease, etc
Interventions	Experimental: Erxian soup, 1 pack per day, for 6 months Control: Caltrate, 1 tablet per day, for 6 months
Outcomes	BMD, ALP, Ca, P
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wu MS 2001

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Kanggusong granule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: F-test, T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 90 postmenopausal osteoporosis patients enrolled: 30 in Kanggusong granule Tieji group, 30 in Kanggusong granule group, 30 in ipriflavone group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine diseases, etc.
Interventions	Experimental: Kanggusong granule, 12 g, twice a day, for 3 months Control: ipriflavone, 1 tablet, 3 times a day, for 3 months
Outcomes	E2, Ca, P, ALP, PTH
Notes	The study was supported by the National Natural Science Foundation, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Wu MS 2007

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of prescription for tonifying kidney in the treatment of osteoporosis Study design: randomised controlled trial Analysis: T-test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 180 osteoporosis patients enrolled: 30 in prescription for tonifying kidney group, 30 in kidney meridian sticking group, 30 in urinary bladder meridian sticking group, 30 in ipriflavone group, 30 in Gushukang group, 30 in non-meridian or acupoint sticking group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, patients with fractures, etc
Interventions	Experimental: prescription for tonifying kidney, 10 pills, 3 times a day; Kanggusong Tieji (kidney meridian sticking or urinary bladder meridian sticking), once per 2 days; for 6 months Control: ipriflavone, 200 mg, 3 times a day, for 6 months
Outcomes	BMD, Ca, P, E2, PTH, CT, adverse effects
Notes	The study was supported by the National Natural Science Foundation, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Wu W 2005

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Xianling Gubao capsules in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 68 postmenopausal osteoporosis patients enrolled: 34 in trial group, 34 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Xianling Gubao capsules (1 g, 3 times a day) and Caltrate (1 tablet per day), for 12 months Control: Caltrate, 1 tablet per day, for 12 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Xiao W 2008

Methods	Country: China Setting: hospital based Aim: to study the effects of Gusong decoction in the treatment of osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 40 osteoporosis patients enrolled: 20 in trial group, 20 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Gusong decoction (15 ml, 3 times a day) and alendronate sodium tablet (1 tablet per day), for 5 months Control: alendronate sodium tablet, 1 tablet per day, for 5 months
Outcomes	BMD, E2, ALP, IL-6, BGP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Xie J 2004

Methods	Country: China Setting: hospital based Aim: to study the effects of Migu tablet in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: 21 drop-outs were not included in the analysis
Participants	Ethnicity: Chinese 65 senile osteoporosis males enrolled (21 drop-out): 24 in trial group, 20 in control group Inclusion criteria: diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: metabolic disease, etc.
Interventions	Experimental: Migu tablet (3 tablets, 3 times a day) and Caltrate (600 mg per day), for 1 year Control: Caltrate, 600 mg per day, for 1 year
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	High risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Xie YM 1997

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Bugu Shengsui capsule in the treatment of primary osteoporosis Study design: single-blind, randomised controlled trial Analysis: T-test, Chi^2 test, Ridit test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 primary osteoporosis patients with kidney-yang deficiency enrolled: 50 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by SPA and DXA Exclusion criteria: secondary osteoporosis, endocrine disease, etc
Interventions	Experimental: Bugu Shengsui capsule, 3 capsules, 3 times a day, for 6 months Control: vitamin D2 (10,000 U per day) and calcium tablet (500 mg, 3 times a day), for 6 months
Outcomes	BMD, Ca, ALP, PTH, CT, adverse effects
Notes	The study was supported by the state administration of traditional Chinese medicine youth fund, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Xiong YH 2008

Methods	Country: China Setting: hospital based Aim: to study the effects of Gusongbao granule in the treatment of postmenopausal osteoporosis Study design: double-blind, placebo-controlled, randomised controlled trial Analysis: T-test Loss to follow-up: 36 drop-outs (12 in Gusongbao granule group, 13 in placebo group, 11 in Jiangu granule group) were not included in the analysis
Participants	Ethnicity: Chinese 144 postmenopausal osteoporosis patients enrolled: 48 (12 drop-outs) in Gusongbao granule group, 48 (13 drop-outs) in placebo group, 48 (11 drop-outs) in Jiangu granule group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease, etc
Interventions	Gusongbao granule group: Gusongbao granule, 1 dose, twice a day, Osteoform calcium amino acid chelate compound capsule, 1 pill, twice a day, for 6 months Jiangu granule group: 1 dose, twice a day, Osteoform calcium amino acid chelate compound capsule, 1 pill, twice a day, for 6 months Placebo group: 1 dose, twice a day, Osteoform calcium amino acid chelate compound capsule, 1 pill, twice a day
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Xu H 2010

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Qianggu capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 postmenopausal osteoporosis patients enrolled: 40 in trial group, 40 in control A group, 40 in control B group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: not mentioned
Interventions	Experimental: Qianggu capsule (1 capsule, 3 times a day) and alendronate sodium (70 mg per week) Control A: alendronate sodium (70 mg per week) Control B: Qianggu capsule (1 capsule, 3 times a day)
Outcomes	BMD, adverse events
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Random numbers table
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Xu M 2009

Methods	Country: China Setting: outpatients and inpatients Aim: to study the effects of Xianlinggubao capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 156 postmenopausal osteoporosis patients enrolled: 52 in trial group, 52 in control A group, 52 in control B group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, disease-affected bone metabolism, endocrine disease, etc
Interventions	Experimental: Xianlinggubao capsule (3 capsules, 3 times a day) and alendronate sodium (70 mg per week) Control A: alendronate sodium (70 mg per week) Control B: Xianlinggubao capsule (3 capsules, 3 times a day)
Outcomes	BMD, adverse events
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Random numbers table
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Xu W 2005

Methods	Country: China Setting: outpatients Aim: to study the effects of Yishen Yanggan mixture in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 110 postmenopausal osteoporosis patients with liver-kidney deficiency enrolled: 60 in trial group, 50 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Yishen Yanggan mixture, 50 ml, twice a day, for 6 months Control: calcium gluconate, 4 tablets, 3 times a day, for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Xu YL 2007

Methods	Country: China Setting: outpatients Aim: to study the effects of acupoint sticking of Migudan in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 96 primary osteoporosis patients enrolled: 48 in trial group, 48 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: secondary osteoporosis, endocrine disease
Interventions	Experimental: acupoint sticking of Migudan (3 times a week), for 3 months Control: Gaitianli (3 tablets, 3 times a day), for 3 months
Outcomes	BGP, Hyp, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Yang B 2007

Methods	Country: China Setting: inpatients Aim: to study the effects of Huangqi in the treatment of osteoporosis Study design: randomised controlled trial Analysis: F-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 58 osteoporosis patients enrolled: 20 in trial group of Huangqi, 20 in control group of Liweiai, 18 in control group of blank Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: endocrine disease, liver or kidney disease, etc
Interventions	Experimental: Huangqi, 1 dose per day, for 6 months Control: Liweiai, 2.5 mg, once a day, for 6 months Blank group: no drug
Outcomes	BMD, ALP, P, Ca
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Ye AN 1998

Methods	Country: China Setting: outpatients and inpatients Aim: to observe the effects of Bushen Zhuanggutang in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 senile osteoporosis patients enrolled: 31 in trial group, 29 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Bushen Zhuanggutang (1 dose per day, fried) and Caltrate (1 tablet per day), for 6 months Control: Caltrate (1 tablet per day), for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Yuan YN 2000

Methods	Country: China Setting: hospital based Aim: to observe the effects of Shangke Jiegu tablet in the treatment of primary osteoporosis Study design: single-blinded, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 primary osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by SPA Exclusion criteria: endocrine disease, etc.
Interventions	Experimental: Shangke Jiegu tablet, 4 tablets, 3 times a day, for 6 months Control: vitamin D2 (10,000 U per day) and calcium tablet (500 mg, 3 times a day), for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Zhan HS 2009

Methods	Country: China Setting: hospital based Aim: to observe the effects of Xuduanzhuanggu capsule in the treatment of primary osteoporosis Study design: double-blinded, placebo and positive-controlled, randomised controlled trial Analysis: T-test Loss to follow-up: 67 drop-outs (37 in herb trial group, 18 in positive control group, 21 in placebo group) were not included in the analysis
Participants	Ethnicity: Chinese 600 primary osteoporosis patients enrolled: 360 in herb trial group (37 drop-outs), 120 in positive control group (18 drop-outs), 120 in placebo group (21 drop-outs) Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: secondary osteoporosis, disease-affected bone metabolism, metabolic disease, liver or kidney disease, etc
Interventions	Experimental: Xuduanzhuanggu capsule (2 capsules, 3 times a day), Gusongbao granule placebo (1 packet, 3 times a day) and calcium tablet (1 tablet, once a day), for 6 months Control: Xuduanzhuanggu capsule placebo (2 capsules, 3 times a day), Gusongbao granule (1 packet, 3 times a day) and calcium tablet (1 tablet, once a day), for 6 months Placebo: Xuduanzhuanggu capsule placebo (2 capsules, 3 times a day), Gusongbao granule placebo (1 packet, 3 times a day) and calcium tablet (1 tablet, once a day), for 6 months
Outcomes	BMD, adverse events
Notes	The study was supported by a National High Technology Research and Development Program, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Insufficient information about the sequence generation process
Allocation concealment	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Blinding All outcomes	Low risk	Double-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Unclear risk	Insufficient information about drop-outs
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported

Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhan ML 2007

Methods	Country: China Setting: hospital based Aim: to observe the effects of Bushen Yangxue decoction in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 40 postmenopausal osteoporosis patients enrolled: 20 in trial group, 20 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Bushen Yangxue decoction, 1 dose per day, for 6 months Control: calcium gluconate, 4 tablets, 3 times a day, for 6 months
Outcomes	Ca, P
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhang DS 2011

Methods	Country: China Setting: outpatients Aim: to observe the effects of Bushenyiqihuoxue soup in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 postmenopausal osteoporosis patients enrolled: 60 in trial group, 60 in control group Inclusion criteria: guiding principles for clinical research on new drugs in traditional Chinese medicine Exclusion criteria: metabolic disease, etc.
Interventions	Experimental: Bushenyiqihuoxue soup (1 dose per day, water fried 600 ml, twice a day) , tamoxifen (20 mg, once a day) and Caltrate (1 tablet, twice a day), for 3 months Control: tamoxifen (20 mg, once a day) and Caltrate (1 tablet, twice a day), for 3 months
Outcomes	ALP, Ca
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No detailed description of the detection of BMD and biochemical indicators

Zhang J 2003

Methods	Country: China Setting: hospital based Aim: to observe the effects of Liuwei Dihuang pills in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 42 postmenopausal osteoporosis patients enrolled: 24 in trial group, 18 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Liuwei Dihuang pills, 8 pills, 3 times a day, for 12 months Control: calcium, 500 mg per day, for 12 months
Outcomes	BMD, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Zhang RH 2004

Methods	Country: China Setting: hospital based Aim: to observe the effects of Yigu capsule in the treatment of postmenopausal osteoporosis Study design: double-blinded, randomised controlled trial Analysis: F-test, Chi^2 test Loss to follow-up: 10 drop-outs were not included in the analysis
Participants	Ethnicity: Chinese 210 postmenopausal osteoporosis patients enrolled: 70 (3 drop-outs) in herbal trial group, 70 (4 drop-outs) in control group, 70 (3 drop-outs) in placebo group Inclusion criteria: WHO diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: metabolic disease, etc.
Interventions	Experimental: Yigu capsule (4 capsules, 3 times a day) and calcium (510 mg), for 6 months Control: Alfacalcidol (1 capsule per day) and calcium (510 mg), or placebo and calcium (510 mg), for 6 months
Outcomes	BMD, E2, Ca, P, ALP, BGP, fractures
Notes	The study was supported by the National Science Foundation and China Postdoctoral Science Foundation, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers generated by computer
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blinded
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhang XG 2011

Methods	Country: China Setting: outpatients Aim: to observe the effects of Bushenjianpi Zhuangguyin in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 100 primary osteoporosis patients enrolled: 50 in trial group, 50 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, disease-affected bone metabolism, etc
Interventions	Experimental: Bushenjianpi Zhuangguyin, 1 dose per day, water fried, twice a day, for 12 weeks Control: Caltrate, 600 mg, twice a day, and Miacalcin ampoule 50 IU, once a day, for 12 weeks
Outcomes	BMD, Ca, P, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Zhang XJ 2008

Methods	Country: China Setting: outpatients and inpatients Aim: to observe the effects of Bushenhuoxue capsule in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test, F-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 senile osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease, disease-affected bone metabolism
Interventions	Experimental: Bushenhuoxue capsule, 4 pills, 3 times a day, for 12 months Control: Caltrate, 600 mg, once a day and Rocaltrol, 0.5 mg, once a day, for 12 months
Outcomes	BMD, E2, IL-6, BGP
Notes	The study was supported by the Zhejiang Provincial Department of traditional Chinese medicine (TCM) modernisation research project, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Zhang XZ 2004

Methods	Country: China Setting: outpatients and inpatients Aim: to observe the effects of Xianlinggubao capsule in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 178 postmenopausal osteoporosis patients enrolled: 62 in trial group (Xianlinggubao capsule), 66 in control group 1 (tibolone), 50 in control group 2 (Osteoform) Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: liver or kidney disease, disease-affected bone metabolism, etc
Interventions	Experimental: Xianlinggubao capsule and Osteoform, 1.0 g, 3 times a day, for 48 weeks Control 1:tibolone tablets and Osteoform, 1.25 mg, once a day control 2: Osteoform, 1 g, once a day
Outcomes	BMD, E2, ALP, BGP, IL-6
Notes	The study was supported by National Natural Science Foundation, but no declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	Random numbers table
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Zhang YL 1996

Methods	Country: China Setting: outpatients and inpatients Aim: to observe the effects of TPF capsule in the treatment of senile osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 senile osteoporosis patients enrolled: 60 in trial group, 60 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis based on bone density levels, BMD detected by SPA Exclusion criteria: not mentioned
Interventions	Experimental: TPF capsule, 3 to 4 capsules, 3 times a day, for 6 months Control: calcium granule, 10 g, twice a day, for 6 months
Outcomes	BMD, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

Zhang YP 2007

Methods	Country: China Setting: hospital based Aim: to observe the effects of Shigu yin in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, F-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 120 postmenopausal osteoporosis patients enrolled: 40 in Shigu yin group, 40 in Caltrate group, 40 in blank group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism, metabolic disease, etc
Interventions	Experimental: Shigu yin, 200 ml, twice a day, for 6 months Control: Caltrate, 600 mg, twice a day, for 6 months blank: no treatment
Outcomes	BMD, BGP, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhang YS 2003

Methods	Country: China Setting: outpatients Aim: to observe the effects of Huoluo Gukang pills in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 210 primary osteoporosis patients enrolled: 81 in herbal trial group, 74 in herbal control group, 55 in blank group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, etc.
Interventions	Experimental: Huoluo Gukang pills, 6.0 g, 3 times a day, for 6 months; Gushukang granule, 10.0 g, twice a day, for 6 months Control: blank (no drug)
Outcomes	E2, BGP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhang ZF 2011

Methods	Country: China Setting: hospital based Aim: to observe the effects of Zhuangguqiangjin tablet in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: 8 drop-outs (3 in trial group, 5 in control group) were not included in the analysis
Participants	Ethnicity: Chinese 90 primary osteoporosis patients with deficiency of kidney and liver enrolled: 48 in trial group (3 drop-outs), 42 in control group (5 drop-outs) Inclusion criteria: Chinese diagnostic criteria for primary osteoporosis, BMD detected by DXA Exclusion criteria: diseases which can affect bone conversion biochemical index, etc
Interventions	Experimental: Zhuangguqiangjin tablet (5, 3 times a day for 3 months, then twice a day for 1 year), Shujinbogu tablet (5 tablets, 3 times a day, for 2 to 4 weeks), Miacalcin ampoule (50 IU, injection, once every other day for 10 days; once every 2 days for 10 days; once every 5 days for 10 days. In the 3rd, 6th, 9th and 12th month repeated again) Control: Miacalcin ampoule (50 IU, injection, once every other day for 10 days; once every 2 days for 10 days; once every 5 days for 10 days. In the 3rd, 6th, 9th and 12th month repeated again)
Outcomes	BMD, Ca, P, ALP, adverse effects, fracture
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhao G 2002

Methods	Country: China Setting: outpatients Aim: to observe the effects of Zishen prescription in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 45 postmenopausal osteoporosis patients enrolled: 25 in trial group, 20 in control group Inclusion criteria: international diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: diseases which can affect therapeutic effect
Interventions	Experimental: Zishen prescription (25 ml, twice a day), Caltrate (1.2 g, twice a day) and Miacalcin (50 IU, injection, twice weekly), for 8 months Control: Caltrate (1.2 g, twice a day) and Miacalcin (50 IU, injection, twice weekly), for 8 months
Outcomes	BMD, E2
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhao HX 2001

Methods	Country: China Setting: hospital based Aim: to observe the effects of Kanggusong capsule in the treatment of postmenopausal osteoporosis Study design: double-blinded, placebo-controlled, randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: 35 drop-outs (11 in trial group, 16 in control group, 8 in opening experimental group) were not included in the analysis
Participants	Ethnicity: Chinese 198 postmenopausal osteoporosis patients enrolled: 70 (11 drop-outs) in trial group, 70 (16 drop-outs) in control group, 58 (8 drop-outs) in opening experimental group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: diseases which can affect biochemical markers of bone turnover
Interventions	Experimental: Kanggusong capsule, 3 capsules, 3 times a day, for 1 year Control: placebo, 3 capsules, 3 times a day, for 1 year
Outcomes	BMD, fractures
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Computer QBASIC procedure
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Unclear risk	No reasons for missing data provided
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhao LN 2003

Methods	Country: China Setting: hospital based Aim: to observe the effects of Yinyanghuo in the treatment of postmenopausal osteoporosis Study design: double-blinded, randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 25 postmenopausal osteoporosis patients enrolled: 15 in trial group, 10 in control group Inclusion criteria: diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: not mentioned
Interventions	Experimental: Yinyanghuo, fried, 200 g per day, 3 times a day, for 3 to 6 months Control: Premarin, 0.625 mg per day, for 3 to 6 months
Outcomes	BMD, Ca, P, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	No information on baseline

Zheng WK 2007

Methods	Country: China Setting: hospital based Aim: to observe the effects of Jinwugutong capsules in the treatment of postmenopausal osteoporosis Study design: double-blinded, placebo-controlled, randomised controlled trial Analysis: T-test, F-test, Chi^2 test Loss to follow-up: 11 drop-outs (5 in trial group, 6 in control group) were not included in the analysis
Participants	Ethnicity: Chinese 120 postmenopausal osteoporosis patients enrolled: 60 in trial group, 60 in control group Inclusion criteria: WHO diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: disease-affected bone metabolism, used medicines that affected bone metabolism
Interventions	Experimental: Jinwugutong capsules (3 capsules, 3 times a day) plus calcium (510 mg per day), for 6 months Control: placebo capsules (3 capsules, 3 times a day) plus calcium (510 mg per day), for 6 months
Outcomes	BMD, BGP, ALP, Ca, P, adverse effect
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind but did not describe who was blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhong RQ 2007

Methods	Country: China Setting: outpatients Aim: to observe the effects of Gushen Yijing tang in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 80 primary osteoporosis patients enrolled: 39 in trial group, 41 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: endocrine disease, liver or kidney disease
Interventions	Experimental: Gushen Yijing tang (1 dose and 2 times a day), for 6 months Control: Caltrate (600 mg, twice a day) for 6 months
Outcomes	BMD, Ca, P, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhou LZ 2001

Methods	Country: China Setting: hospital based Aim: to observe the effects of Tongbu Qianggutang in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 40 primary osteoporosis patients enrolled: 30 in trial group, 10 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis, liver or kidney disease, etc
Interventions	Experimental: Tongbu Qianggutang (400 ml per day), for 3 months Control: calcium (1.5 g, 3 times a day) plus vitamin D3 (0.25 μg per day), for 3 months
Outcomes	ALP, CT, BGP, Ca, P, E2, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhou XT 2001

Methods	Country: China Setting: outpatients Aim: to observe the effects of Guilu Erxiantang in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 85 primary osteoporosis patients enrolled: 45 in trial group, 40 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis based on bone density levels, BMD detected by DXA Exclusion criteria: secondary osteoporosis
Interventions	Experimental: Guilu Erxiantang (1 dose per day) and calcium carbonate tablet (300 mg per day), for 6 months Control: calcium carbonate tablet (300 mg per day), for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhou ZK 2006

Methods	Country: China Setting: outpatients and inpatients Aim: to observe the effects of Huangqi Sanxian tang in the treatment of postmenopausal osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 50 postmenopausal osteoporosis patients enrolled: 30 in trial group, 20 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: bone metabolic disease induced by diabetes mellitus, liver or kidney disease
Interventions	Experimental: Huangqi Sanxian tang (1 dose per day), for 3 months Control: nilestriol (2 mg, twice per month), for 3 months
Outcomes	BMD, E2, ALP
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhu HJ 2011

Methods	Country: China Setting: inpatients Aim: to observe the effects of Bushen Tianjing Huoxue therapy in the treatment of primary osteoporosis Study design: randomised controlled trial Analysis: T-test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 61 primary osteoporosis patients enrolled: 31 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis Exclusion criteria: secondary osteoporosis, endocrine disease, liver or kidney disease, etc
Interventions	Experimental: Bushen Tianjing Huoxue therapy (1 dose per day, twice a day), for 6 months Control: Caltrate (600 mg, once a day) and calcitriol soft capsule (0.25 μg, once a day) , for 6 months
Outcomes	BMD
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Unclear risk	Insufficient information to permit judgement of 'low risk' or 'high risk'
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zhu HM 2012

Methods	Country: China Setting: hospital based Aim: to observe the effects of Bushen Tianjing Huoxue therapy in the treatment of primary osteoporosis Study design: a multicentre, double-blinded, placebo-controlled, randomised controlled trial Analysis: F-test, based on the intention-to-treat (ITT) principle Loss to follow-up: 42 drop-outs (15 in low-dose Xianlinggubao group, 14 in high-dose Xianlinggubao group, 13 in placebo group)
Participants	Ethnicity: Chinese 180 postmenopausal osteoporosis patients enrolled: 61 in low-dose Xianlinggubao group, 58 in high-dose Xianlinggubao group, 61 in placebo group Inclusion criteria: BMD criteria for osteoporosis Exclusion criteria: previous exposure to toremifene, tamoxifen, droloxifene, lasofoxifene or other investigational selective oestrogen receptor modulators; use of bisphosphonates during the past 24 months; history of advanced scoliosis, osteoarthritis or other clinical spinal deformity which would interfere with BMD measurement etc
Interventions	Experimental: Xianlinggubao capsule, 3 g (6 capsules) per day in low-dose group, or 6 g (12 capsules) per day in high-dose group, plus calcium (500 mg) and vitamin D (200 IU), for 12 months Control: placebo capsule (12 capsules per day), plus calcium (500 mg) and vitamin D (200 IU), for 12 months
Outcomes	BMD, fracture, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Low risk	Random numbers
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Double-blind
Incomplete outcome data addressed All outcomes	Unclear risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Low risk	The study appears to be free of other sources of bias

Zou JJ 2005

Methods	Country: China Setting: outpatients Aim: to observe the effects of Guben Zhuanggu capsules in the treatment of primary osteoporosis Study design: single-blinded, randomised controlled trial Analysis: T-test, Chi^2 test Loss to follow-up: not reported
Participants	Ethnicity: Chinese 60 primary osteoporosis patients enrolled: 30 in trial group, 30 in control group Inclusion criteria: Chinese diagnostic criteria for osteoporosis, BMD detected by DXA Exclusion criteria: secondary osteoporosis, endocrine disease
Interventions	Experimental: Guben Zhuanggu capsules (2 capsules, 3 times a day) and Caltrate (600 mg, once a day), for 6 months Control: Guben Zhuanggu capsules simulated (2 capsule, 3 times a day) and Caltrate (600 mg, once a day), for 6 months
Outcomes	BMD, adverse effects
Notes	No funding sources or declarations of interest for the primary researchers reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Adequate sequence generation	Unclear risk	No information provided
Allocation concealment	Unclear risk	No information provided
Blinding All outcomes	Low risk	Single-blind
Incomplete outcome data addressed All outcomes	Low risk	No missing outcome data
Free of selective reporting	Unclear risk	Not all the outcomes that were of interest in this review were reported
Free of other bias	Unclear risk	P value for the baseline comparison not stated

ALP: alkaline phosphatase
BGP: bone Gla protein
BMC: bone mineral content
BMD: bone mineral density
Ca: serum calcium
CT: computed tomography

DPA: dual photon absorptiometry
DXA: dual energy X-ray absorptiometry
E2: oestradiol
HRT: hormone replacement therapy
Hyp: hydroxyproline
IL-6: interleukin-6
OPG: osteoprotegerin
P: phosphorus
PTH: parathyroid hormone
SPA: single photon absorptiometry
WHO: World Health Organization

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Ai SC 2003	Randomised controlled trial comparing herbal application Shenque (CV 8) with sodium etidronate in 70 primary osteoporosis patients. However, the herbal intervention was acupoint patch and did not meet the inclusion criteria
Ai SC 2003a	Non-randomised study comparing herbal application Shenque with sodium etidronate in 70 patients with osteoporosis
Bo LY 2003	Randomised controlled trial comparing Gushukang particles with calcium carbonate plus vitamin D in 94 cases with osteoporotic compression fracture of the spine. However, the outcome measure was general therapeutic effect based on different evaluated standards and did not meet the inclusion criteria
Chen AP 2005	Randomised controlled trial comparing Liuwei Dihuang pills with Caltrate in 40 senile osteoporosis patients. However, the diagnosis of osteoporosis was not based on a BMD test
Chen JJ 2010	Randomised controlled trial comparing Zini Bushenjiangu soup and routine western medicine treatment with routine western medicine treatment in 43 senile osteoporosis patients. However, the treatment duration was less than 3 months
Chen XF 2003	Randomised controlled trial comparing Xianlinggubao plus vitamin D3 and calcium amino acid chelate with calcium gluconate in 150 osteoporosis patients. The trial intervention did not meet the inclusion criteria
Chen XF 2007	Randomised controlled trial comparing Bushen Jianpi mixture with Caltrate in 64 senile primary osteoporosis patients. However, it did not report the part of BMD measured
Dai Y 2007a	Randomised controlled trial comparing Migupian (68) and Xianlinggubao (50) with Caltrate (42) in 160 postmenopausal osteoporosis patients. However, the trial was published repeatedly
Deng WM 1997	Randomised controlled trial comparing tonifying kidney to strength bone decoction with calcitonin in 135 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Deng WM 1997a	Randomised controlled trial comparing kidney-tonifying herbs with calcitonin in 77 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test

(*Continued*)

Deng WM 2001	The participants were not osteoporosis patients
Deng WM 2002	Randomised controlled trial comparing Bushen Zhuanggu granule with calcitonin in 175 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Ding GZ 1995	Randomised controlled trial comparing Bushen Jiangu capsule with calcium in 34 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Dong YL 2004	Randomised controlled trial comparing Liuwei Dihuang pills plus calcium tablet and vitamin C with calcium tablet plus vitamin C in 60 senile osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and did not meet the inclusion criteria
Fan GF 2008	Randomised controlled trial comparing Qiangjin Zhuanggu pill with oyster shell calcium chewable tablets in 248 primary osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Fan ZY 1995	Randomised controlled trial comparing Yugu pill with nilestriol in 90 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test
Ge L 2005	Randomised controlled trial comparing Jiangu pills with Caltrate in 40 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test
Gong L 2000	Randomised controlled trial comparing traditional medicine (Yishen Zhuanggu mixture or Shengu capsule) with no treatment in 80 primary osteoporosis patients. However, it was a duplicate publication
Gong ZF 2011	Randomised controlled trial comparing Bushenshujin soup and celecoxib capsules with celecoxib capsules in 90 primary osteoporosis patients. However, the treatment duration was 4 to 12 weeks
Gu M 2004	Randomised controlled trial comparing Fortune's drynariae rhizome with calcium gluconate in 82 primary osteoporosis patients. However, it did not report the part of BMD measured
Gu T 2011	Randomised controlled trial comparing Gushu recipes, calcium carbonate D3 and elcatonin injection with calcium carbonate D3 and elcatonin injection in 43 primary osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Guo F 2003	Randomised controlled trial comparing Yishen Yanggan decoction with calcium gluconate in 60 osteoporosis patients. However, it did not report the part of BMD measured
Guo HN 1998	Randomised controlled trial comparing Tiankui tang with gonadal hormone in 120 primary osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
He YC 2008	Randomised controlled trial comparing Xianlinggubao capsule with salmon calcitonin in 88 senile osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria

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Hu XD 2011	Randomised controlled trial comparing Chinese Traditional Medicine recipe with high calcium tablets and Caltrate in 164 senile osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Jia JH 2010	The type of interventions did not meet the inclusion criteria
Jiang SY 1995	Randomised controlled trial comparing Gushukang granule with calcium tablet and vitamin D in 400 primary osteoporosis patients. However, it did not report the BMD of the ulna and radius respectively
Ke Q 2005	Randomised controlled trial comparing Jiangu recipe preparation with alendronate sodium tablet in 70 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Ke Q 2005a	Randomised controlled trial comparing Jiangu recipe preparation with alendronate sodium tablet in 95 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test
Li BL 2007a	Randomised controlled trial comparing Jianshen prescription with alendronate sodium in 60 postmenopausal osteoporosis patients. However, it was a duplicate publication
Li CX 2005	Randomised controlled trial comparing movement therapy plus Bushen Tongluo tang with Caltrate in 87 senile osteoporosis patients. The therapy intervention did not meet the inclusion criteria
Li JF 2008	Randomised controlled trial comparing Bushen Qianggu tang plus calcium with calcium in 120 primary osteoporosis patients. However, the treatment duration was less than 3 months
Li YM 2005	Non-randomised study comparing Bushen Huoxue preparation with Caltrate in 60 patients with postmenopausal osteoporosis
Lin HY 1998	Randomised controlled trial comparing Yishen Jiangu tang with Caltrate in 40 primary osteoporosis patients. However, it was published repeatedly
Liu HB 2005	Non-randomised study comparing medicine-separated sticking on Shenqu with sodium etidronate in 130 patients with primary osteoporosis
Liu HQ 2010	The type of interventions did not meet the inclusion criteria
Liu TS 2008	Randomised controlled trial comparing Traditional Chinese Medicine plus alfacalcidol soft capsule with alfacalcidol soft capsule in 124 primary osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Liu YS 2011	Without control group
Liu YX 1998	Randomised controlled trial comparing Fuguning granule with calcium tablet in 100 postmenopausal osteoporosis patients. However, it did not report the BMD of the ulna and radius respectively
Lu W 2004	Randomised controlled trial comparing Bushen Jiangu tang with tibolone tablets in 80 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test

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Lu ZD 2004	Randomised controlled trial comparing Gushukang with nilestriol in 40 postmenopausal osteoporosis patients. However, it did not report the part of BMD measured
Luo QY 2011	Without control group
Pan X 2004	Non-randomised study comparing Huangqi injection to acupoint plus Caltrate with Caltrate in 64 patients with primary osteoporosis
Peng T 2003	Non-randomised study comparing Qianggu extracts with calcium gluconate in 102 patients with postmenopausal osteoporosis
Qi ZX 2000	Randomised controlled trial comparing Shengsuiyin with Caltrate in 40 primary osteoporosis patients. However, it was published repeatedly
Ren JH 2011	Randomised controlled trial comparing Jinwugutong capsule and alendronate with alendronate in 90 postmenopausal osteoporosis patients. However, the outcome measure was general therapeutic effect about pain degree based on visual analogue scale (VAS) and it did not meet the inclusion criteria
Shang YM 2007	Randomised controlled trial comparing Xianlinggubao capsule with conjugated oestrogens or calcium, or both, in 90 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Shi B 2010	Randomised controlled trial comparing Traditional Chinese Medicine differentiation with calcium and vitamin D in 110 senile osteoporosis patients. However, it did not report the part of BMD measured
Shou ZX 2008	Randomised controlled trial comparing Qianggu Huoli tablet plus Caltrate with Caltrate in 227 primary osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Shu J 2005	Randomised controlled trial comparing Bushen Yijing prescription with calcium tablet in 50 cases of osteoporosis. The interventions in both arms were used for 7 weeks (less than 3 months)
Shuai B 2008	Randomised controlled trial comparing Jiangu granule with Gusongbao granule in 96 primary osteoporosis patients. However, the control treatment did not meet the inclusion criteria
Song HX 2003	Randomised controlled trial comparing Bushen Zhuanggu pill with calcium in 84 osteoporosis patients. However, it did not report the part of BMD measured
Song XW 1997	Randomised controlled trial comparing Bushen herbal medicine with calcium in 55 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Song XW 2001	Randomised controlled trial comparing Bushenhuoxue recipe with nilestriol or calcium in 68 postmenopausal osteoporosis patients. However, it was published repeatedly
Su CH 2004	Randomised controlled trial comparing strong bone capsule with calcium carbonate plus vitamin D in 250 senile osteoporosis patients. However, the diagnostic method was not based on a BMD test

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Su CH 2005	Randomised controlled trial comparing strong bone capsule with Caltrate in 105 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Su YB 2008	Randomised controlled trial comparing Qianggu Huoxue pill with Caltrate in 61 primary osteoporosis patients. However, the treatment duration was less than 3 months
Su ZW 2010	Randomised controlled trial comparing Bushenzhuanggu soup, calcitriol capsule, calcium supplement with vitamin D chewable tablets, salcatonin injection and bone peptide injection with calcitriol capsule, calcium supplement with vitamin D chewable tablets, salcatonin injection and bone peptide injection in 110 primary osteoporosis patients. However, the treatment duration was less than 3 months
Sun JM 2002	Randomised controlled trial comparing Yiqi Tiansui mixture plus Caltrate with Caltrate in 40 patients. However, this trial had the same data as the trial conducted by Mu G 2001
Sun X 2002	Randomised controlled trial comparing Jiawei Zuogui pill with calcium in 90 patients. However, this trial had the same data as the trial conducted by Lv ZH
Sun YM 2008	Randomised controlled trial comparing Gegen with alfacalcidol in 44 primary osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Tan X 2010	The type of interventions did not meet the inclusion criteria
Tang JM 1999	Randomised controlled trial comparing Jiangu powder with activated calcium powder in 98 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test
Tu PS 2008	Randomised controlled trial comparing Bushen prescription with no treatment in 60 osteoporosis patients. However, the treatment duration was less than 3 months
Wang CH 2003	Non-randomised study comparing Gusongkang capsule with calcium lactate in 100 patients with senile osteoporosis
Wang GH 2011	Randomised controlled trial comparing Zhuanggutongluobao with vitamin D2 plus calcium tablet in 65 patients with primary osteoporosis. However, the comparability between groups was bad
Wang HM 1998	Non-randomised study comparing Bugu capsule with activated calcium powder in 60 patients with senile osteoporosis
Wang J 2008	Randomised controlled trial comparing Bugan Yishen tang with alfacalcidol in 65 postmenopausal osteoporosis patients. However, the treatment duration was less than 3 months
Wang JH 2001	Randomised controlled trial comparing Qianggu pill with calcium lactate plus vitamin D in 120 osteoporosis patients. However, it was not clear that all were primary osteoporosis patients
Wang LM 2004	Randomised controlled trial comparing Jiangu tang with Suplical in 99 senile osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria

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Weng M 2003	Randomised controlled trial comparing medicine-separated sticking on Shenque (RN8) with sodium etidronate in 70 primary osteoporosis patients. However, the herbal intervention was an acupoint patch and it did not meet the inclusion criteria
Wu CM 2004	Randomised controlled trial comparing Bushen Zhuanggu capsule with diethylstilbestrol in 71 osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Wu D 2008	Randomised controlled trial comparing Xiaoyao san plus Caltrate with Caltrate in 60 senile osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Wu XG 2008	Randomised controlled trial comparing Xianlinggubao capsule with no treatment in 87 osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Xia WF 2006	Unavailable data
Xie J 2001	The participants were not patients with osteoporosis
Xie J 2003	The participants were not patients with osteoporosis
Xu CY 2004	Randomised controlled trial comparing Bushen Jianpi Tongluo decoction plus Yishen Jiangu tablet and Caltrate with Yishen Jiangu tablet and Caltrate in 125 primary osteoporosis patients. The interventions in both arms were used for 60 days (less than 3 months)
Xu LZ 2001	Randomised controlled trial comparing Bupi Yishen Huoxue prescription with calcium or analgesic discontinuously in 130 osteoporosis patients. However, it was not clear that all were primary osteoporosis patients
Xu PH 2001	Non-randomised study comparing Bushen Jiangu capsule with Gusongbao particles in 330 patients with osteoporosis
Yan XP 2007	Without control group
Yang JP 2007	Randomised controlled trial comparing Gushibao capsule with calcium tablet plus vitamin D in 105 osteoporosis patients. However, it was not clear that all were primary osteoporosis patients
Yang WH 2010	The type of interventions did not meet the inclusion criteria
Yu YH 2011	Randomised controlled trial comparing Erzhi pill with alendronate sodium tablets, Erzhi pill and alendronate sodium tablets with alendronate sodium tablets, in 60 postmenopausal osteoporosis patients. However, it did not report the part of BMD measured
Zhang GM 2001	Randomised controlled trial comparing Xianguning powder with nilestriol in 80 postmenopausal osteoporosis patients. However, the diagnostic method was not based on a BMD test
Zhang H 1999	Randomised controlled trial comparing Gubao capsule with Vita-D3 or Longmu Zhuanggu powder in 140 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test

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Zhang WY 2005	Randomised controlled trial comparing Bupi Yishen Huoxue prescription with oestradiol or testosterone in 45 senile osteoporosis patients. However, the outcome measure was general therapeutic effect based on different evaluated standards and it did not meet the inclusion criteria
Zhao G 2004	Randomised controlled trial comparing Qianggu capsule with tibolone tablets in 69 postmenopausal osteoporosis patients. However, the diagnostic method was not reported definitively
Zhao Z 2010	Randomised controlled trial comparing Yanghe capsule with Caltrate in 60 primary osteoporosis patients. However, it did not report the part of BMD measured
Zheng NX 2011	The type of interventions did not meet the inclusion criteria
Zheng XH 2004	Randomised controlled trial comparing Gukangye with calcium tablet in 150 primary osteoporosis patients. However, the diagnostic method was not based on a BMD test
Zheng ZW 2010	Randomised controlled trial comparing Bushenzhuanggu soup plus western medicines (ossification alcohol capsule, calcium supplement with vitamin D chewable tablets, calcitonin and salmon calcitonin injection) with the same western medicines in 110 primary osteoporosis patients. However, the treatment duration was less than 3 months
Zhong J 2010	Randomised controlled trial comparing Zhuanggubushen decoction plus carp calcitonin injection J with carp calcitonin injection in 50 osteoporosis patients. However, the treatment duration was less than 3 months and the participants did not meet the inclusion criteria
Zhong RQ 2007a	Randomised controlled trial comparing Gushen Yijing tang with Caltrate in 79 osteoporotic fracture patients. However, the participants did not meet the inclusion criteria
Zhong RQ 2007b	Randomised controlled trial comparing Gushen Yijing tang with Caltrate in 124 osteoporotic fracture patients. However, the participants did not meet the inclusion criteria
Zhou PQ 1997	Non-randomised study comparing Migu tablet with nilestriol in 50 patients with postmenopausal osteoporosis
Zhu LP 2008	Randomised controlled trial comparing Bushen Jianpi tang plus oyster shell calcium chewable tablets with oyster shell calcium chewable tablets in 80 postmenopausal osteoporosis patients. However, the treatment duration was less than 3 months

BMD: bone mineral density

DATA AND ANALYSES

Comparison 1. Chinese herbal medicines versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 New fractures	1	104	Risk Ratio (M-H, Fixed, 95% CI)	0.05 [0.00, 0.85]
1.1 Kanggusong capsule versus placebo (12 months)	1	104	Risk Ratio (M-H, Fixed, 95% CI)	0.05 [0.00, 0.85]
2 Bone mineral density (BMD)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.1 Migu decoction versus placebo (BMD of lumbar spine, 4 months)	1	20	Mean Difference (IV, Fixed, 95% CI)	0.16 [0.06, 0.26]
2.2 Kanggusong capsule versus placebo (BMD of lumbar spine, 12 months)	1	140	Mean Difference (IV, Fixed, 95% CI)	0.06 [0.02, 0.10]
2.3 Bushen Yigu soft extract versus placebo (BMD of radius, 3 months)	1	59	Mean Difference (IV, Fixed, 95% CI)	0.06 [0.03, 0.09]
2.4 Bushen Yigu soft extract versus placebo (BMD of ulna, 3 months)	1	59	Mean Difference (IV, Fixed, 95% CI)	0.06 [0.02, 0.10]
3 Oestradiol (E2)	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1 Bushen Yigu soft extract versus placebo (3 months)	1	59	Mean Difference (IV, Random, 95% CI)	122.89 [92.97, 152.81]
4 Symptoms including pain, muscle fatigue and limited mobility	1	104	Risk Ratio (M-H, Fixed, 95% CI)	1.20 [1.05, 1.37]
4.1 Kanggusong capsule versus placebo (Bone pain at lumbar spine, 12 months)	1	104	Risk Ratio (M-H, Fixed, 95% CI)	1.20 [1.05, 1.37]

Comparison 2. Chinese herbal medicines versus no intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Bone mineral density (BMD)	4		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 Bushen Shengsui principle versus no intervention (BMD of lumbar spine, 6 months)	1	61	Mean Difference (IV, Fixed, 95% CI)	0.07 [-0.06, 0.20]
1.2 Bushen Shengsui principle versus no intervention (BMD of femoral neck, 6 months)	1	61	Mean Difference (IV, Fixed, 95% CI)	0.10 [-.00, 0.20]

1.3 Qianggu soft extract versus no intervention (BMD of femoral neck, 6 months)	1	97	Mean Difference (IV, Fixed, 95% CI)	0.09 [0.03, 0.15]
1.4 Shigu yin versus no treatment (BMD of Femoral neck, 6 months)	1	80	Mean Difference (IV, Fixed, 95% CI)	0.08 [0.03, 0.13]
1.5 Yishen Zhuanggu mixture versus no intervention (BMD of femoral neck, 6months)	1	63	Mean Difference (IV, Fixed, 95% CI)	0.05 [-0.01, 0.11]
1.6 Shengu capsule versus no intervention (BMD of femoral neck, 6 months)	1	34	Mean Difference (IV, Fixed, 95% CI)	0.02 [-0.06, 0.09]
2 Oestradiol (E2)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.1 Bushen Shengsui principle versus no intervention (6 months)	1	61	Mean Difference (IV, Fixed, 95% CI)	4.40 [-4.61, 13.41]
2.2 Yishen Zhuanggu mixture versus no treatment (6 months)	1	22	Mean Difference (IV, Fixed, 95% CI)	2.10 [-6.22, 10.42]
2.3 Huoluo Gukang pills versus no intervention (6 months)	1	136	Mean Difference (IV, Fixed, 95% CI)	2.40 [-1.22, 6.02]
2.4 Gushukang granule versus no intervention (6 months)	1	129	Mean Difference (IV, Fixed, 95% CI)	2.10 [-1.69, 5.89]
3 Bone Gla protein (BGP)	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1 Yishen Zhuanggu mixture versus no treatment (6 months)	1	63	Mean Difference (IV, Random, 95% CI)	-1.0 [-6.15, 4.15]
3.2 Shengu capsule versus no treatment (6 months)	1	34	Mean Difference (IV, Random, 95% CI)	-5.10 [-10.63, 0.43]
3.3 Huoluo Gukang pills versus no treatment (6 months)	1	136	Mean Difference (IV, Random, 95% CI)	2.70 [1.23, 4.17]
3.4 Gushukang granule versus no treatment (6 months)	1	129	Mean Difference (IV, Random, 95% CI)	3.5 [1.92, 5.08]
3.5 Shigu yin versus no treatment (6 months)	1	80	Mean Difference (IV, Random, 95% CI)	1.2 [0.17, 2.23]

Comparison 3. Chinese herbal medicines versus western medicine

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 New fractures	1	142	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.1 Kanggusong granule versus Caltrate (9 months)	1	71	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.2 Kanggusong granule versus ipriflavone plus Caltrate (9 months)	1	71	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Bone mineral density (BMD)	51		Mean Difference (IV, Random, 95% CI)	Subtotals only

2.1 Kanggusong granule versus ipriflavone plus Caltrate (BMD of lumbar spine, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	0.0 [-0.05, 0.05]
2.2 Kanggusong granule versus Caltrate (BMD of lumbar spine, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	0.04 [-0.02, 0.10]
2.3 Kanggusong capsule versus Caltrate (BMD of lumbar spine, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.06 [0.02, 0.11]
2.4 Strong Bone capsule versus Caltrate (BMD of lumbar spine, 3 months)	1	105	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.08, 0.06]
2.5 Qianggu capsule versus active vitamin D3 (BMD of lumbar spine, 6 months)	1	54	Mean Difference (IV, Random, 95% CI)	0.04 [-0.01, 0.09]
2.6 Qianggu capsule versus alendronate (BMD of lumbar spine, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.01 [-0.04, 0.05]
2.7 Herba epimedii prescription versus vitamin D plus Caltrate (BMD of lumbar spine, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.03 [-0.00, 0.06]
2.8 Bushen Shengsui principle versus conjugated oestrogens plus medroxyprogesterone (BMD of lumbar spine, 6 months)	1	66	Mean Difference (IV, Random, 95% CI)	0.0 [-0.12, 0.12]
2.9 Bushen Qianggutang versus Caltrate (BMD of lumbar spine, 3 months)	1	40	Mean Difference (IV, Random, 95% CI)	0.09 [0.01, 0.17]
2.10 Bushen Jianpi Migu prescription versus Caltrate (BMD of lumbar spine, 3 months)	1	150	Mean Difference (IV, Random, 95% CI)	0.06 [0.03, 0.09]
2.11 Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (BMD of lumbar spine, 6 months)	1	141	Mean Difference (IV, Random, 95% CI)	0.02 [-0.01, 0.05]
2.12 Bushen Huoxue capsules versus Caltrate and Rocalirol (BMD of lumbar spine, 12 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.02 [-0.05, 0.09]
2.13 Bushen Zhuanggu tang versus alendronate sodium tablets (BMD of lumbar spine, 3 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.04 [0.01, 0.07]
2.14 Bushenjianpi Zhuangguyin versus Caltrate and calcitonin (BMD of lumbar spine, 12 weeks)	1	100	Mean Difference (IV, Random, 95% CI)	0.16 [0.10, 0.22]

2.15 Jiawei Bushen Zhuangjintang versus calcium granule (BMD of lumbar spine, 3 months)	1	90	Mean Difference (IV, Random, 95% CI)	0.10 [0.05, 0.15]
2.16 Gukang oral liquid versus alendronate (BMD of lumbar spine, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.01 [-0.03, 0.05]
2.17 Kidney-tonifying herbs versus nilestriol (BMD of lumbar spine, 6 months)	1	46	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.09, 0.05]
2.18 Kidney-tonifying herbs versus calcium (BMD of lumbar spine, 6 months)	1	46	Mean Difference (IV, Random, 95% CI)	0.02 [-0.04, 0.08]
2.19 Yishen Yanggan mixture versus calcium gluconate (BMD of lumbar spine, 6 months)	1	110	Mean Difference (IV, Random, 95% CI)	0.04 [0.01, 0.07]
2.20 Yinyanghuo versus conjugated oestrogens (BMD of lumbar spine, 3 to 6 months)	1	25	Mean Difference (IV, Random, 95% CI)	0.03 [-0.04, 0.10]
2.21 Shenyao capsules versus Caltrate (BMD of lumbar spine, 6 months)	1	100	Mean Difference (IV, Random, 95% CI)	0.0 [-0.05, 0.05]
2.22 Guli powder versus Caltrate (BMD of lumbar spine, 3 months, male)	1	30	Mean Difference (IV, Random, 95% CI)	0.02 [-0.01, 0.05]
2.23 Guli powder versus Caltrate (BMD of lumbar spine, 3 months, female)	1	30	Mean Difference (IV, Random, 95% CI)	0.04 [-0.07, 0.15]
2.24 Gushen Yijing tang versus Caltrate (BMD of lumbar spine, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.06 [-0.02, 0.14]
2.25 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of lumbar spine, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.12 [-0.01, 0.26]
2.26 Huangqi Sanxian tang versus nilestriol (BMD of lumbar spine, 3 months)	1	50	Mean Difference (IV, Random, 95% CI)	0.00 [-0.03, 0.04]
2.27 Zishen Gukang pill versus Caltrate plus vitamin D (BMD of lumbar spine, 3 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.00 [-0.05, 0.04]
2.28 Xianling Gusong capsules versus Caltrate (BMD of lumbar spine, 6 months)	1	43	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.08, 0.02]
2.29 Jianshenfang granule versus alendronate sodium (BMD of lumbar spine, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.09 [-0.03, 0.21]

2.30 Jiangu recipe versus alendronate sodium tablets (BMD of lumbar spine, 12 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.02 [-0.00, 0.04]
2.31 Gukang decoction versus alendronate sodium tablets (BMD of lumbar spine, 4 months)	1	83	Mean Difference (IV, Random, 95% CI)	-0.00 [-0.03, 0.03]
2.32 Gumiling granule versus bicarbonate calcium chewable (BMD of lumbar spine, 6 months)	1	25	Mean Difference (IV, Random, 95% CI)	0.04 [-0.02, 0.09]
2.33 Gujian capsule versus alfacalcidol (BMD of lumbar spine, 6 months)	1	65	Mean Difference (IV, Random, 95% CI)	0.14 [0.03, 0.26]
2.34 Xianlinggubao capsule versus alendronate (BMD of lumbar spine, 6 months)	1	104	Mean Difference (IV, Random, 95% CI)	0.0 [-0.02, 0.02]
2.35 Erxian soup versus Caltrate (BMD of lumbar spine, 6 months)	1	58	Mean Difference (IV, Random, 95% CI)	0.06 [0.02, 0.11]
2.36 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of lumbar spine, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.25 [0.11, 0.39]
2.37 Gukang oral liquid versus calcium gluconate (BMD of radius, 6 months)	1	61	Mean Difference (IV, Random, 95% CI)	0.02 [0.01, 0.04]
2.38 Herba epimedii prescription versus vitamin D plus Caltrate (BMD of radius, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.07 [0.04, 0.11]
2.39 Bushen Yigu soft extract versus Alfacalcidol (BMD of radius, 3 months)	1	74	Mean Difference (IV, Random, 95% CI)	0.01 [-0.02, 0.04]
2.40 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of radius, 6 months)	1	50	Mean Difference (IV, Random, 95% CI)	0.08 [-0.12, 0.28]
2.41 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of radius, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.04 [-0.02, 0.11]
2.42 Liuwei Dihuang pills versus calcium (BMD of radius, 12 months)	1	42	Mean Difference (IV, Random, 95% CI)	0.04 [0.03, 0.05]
2.43 Gukang oral liquid versus calcium gluconate (BMD of ulna, 6 months)	1	61	Mean Difference (IV, Random, 95% CI)	0.0 [-0.02, 0.02]

2.44 Bushen Yigu soft extract versus Alfacalcidol (BMD of ulna, 3 months)	1	74	Mean Difference (IV, Random, 95% CI)	0.02 [-0.01, 0.05]
2.45 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of ulna, 6 months)	1	50	Mean Difference (IV, Random, 95% CI)	0.06 [-0.01, 0.13]
2.46 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of ulna, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.05 [-0.00, 0.11]
2.47 Liuwei Dihuang pills versus calcium (BMD of ulna, 12 months)	1	42	Mean Difference (IV, Random, 95% CI)	0.02 [0.01, 0.03]
2.48 Kanggusong granule versus ipriflavone plus Caltrate (BMD of femoral neck, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.04, 0.02]
2.49 Kanggusong granule versus Caltrate (BMD of femoral neck, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	0.01 [-0.03, 0.05]
2.50 Herba epimedii prescription versus vitamin D plus Caltrate (BMD of femoral neck, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.06 [0.02, 0.10]
2.51 Bushen Shengsui principle versus conjugated oestrogens plus medroxyprogesterone (BMD of femoral neck, 6 months)	1	66	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.11, 0.09]
2.52 Kidney-tonifying herbs versus nilestriol (BMD of femoral neck, 6 months)	1	46	Mean Difference (IV, Random, 95% CI)	0.02 [-0.02, 0.06]
2.53 Kidney-tonifying herbs versus calcium (BMD of femoral neck, 6 months)	1	46	Mean Difference (IV, Random, 95% CI)	0.05 [0.01, 0.09]
2.54 Gumikang capsule versus calcium gluconate (BMD of femoral neck, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.02 [-0.04, 0.08]
2.55 Yanghuo Sanzi tang versus Caltrate (BMD of femoral neck, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.05 [0.02, 0.08]
2.56 Qianggu soft extract versus calcium gluconate (BMD of femoral neck, 6 months)	1	99	Mean Difference (IV, Random, 95% CI)	0.07 [0.02, 0.12]
2.57 Qianggu capsules versus oestradiol valerate (BMD of femoral neck, 6 months)	1	90	Mean Difference (IV, Random, 95% CI)	0.02 [-0.02, 0.06]

2.58 Qianggu paste versus calcium gluconate tablets (BMD of femoral neck, 6 months)	1	123	Mean Difference (IV, Random, 95% CI)	0.07 [0.03, 0.11]
2.59 Qianggu capsule versus active vitamin D3 (BMD of femoral neck, 6 months)	1	54	Mean Difference (IV, Random, 95% CI)	0.03 [-0.01, 0.07]
2.60 Shigu yin versus Caltrate (BMD of femoral neck, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.03 [-0.01, 0.07]
2.61 Jiangu capsule versus Caltrate (BMD of femoral neck, 12 months)	1	125	Mean Difference (IV, Random, 95% CI)	0.04 [0.03, 0.06]
2.62 Gujian capsule versus alfacalcidol (BMD of femoral neck, 6 months)	1	65	Mean Difference (IV, Random, 95% CI)	0.08 [0.03, 0.14]
2.63 Bushenhuoxue capsules versus Caltrate and Rocalirol (BMD of femoral neck, 12 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.02 [-0.06, 0.10]
2.64 Bushenjianpi Zhuangguyin versus Caltrate and calcitonin (BMD of femoral neck, 12 weeks)	1	100	Mean Difference (IV, Random, 95% CI)	0.06 [0.00, 0.12]
2.65 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of femoral neck, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.09 [-0.05, 0.23]
2.66 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of femoral neck, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.07 [-0.06, 0.20]
2.67 Kanggusong granule versus ipriflavone plus Caltrate (BMD of Ward's, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.07, 0.01]
2.68 Kanggusong granule versus Caltrate (BMD of Ward's, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	0.0 [-0.04, 0.04]
2.69 Kidney-tonifying herbs versus nilestriol (BMD of Ward's, 6 months)	1	46	Mean Difference (IV, Random, 95% CI)	0.06 [0.02, 0.10]
2.70 Kidney-tonifying herbs versus calcium (BMD of Ward's, 6 months)	1	46	Mean Difference (IV, Random, 95% CI)	0.10 [0.06, 0.14]
2.71 Gujian capsule versus alfacalcidol (BMD of Ward's, 6 months)	1	65	Mean Difference (IV, Random, 95% CI)	0.08 [0.01, 0.15]
2.72 Qianggu capsule versus alendronate (BMD of Ward's, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.01 [-0.02, 0.03]

2.73 Xianlinggubao capsule versus alendronate (BMD of Ward's, 6 months)	1	104	Mean Difference (IV, Random, 95% CI)	-0.00 [-0.02, 0.02]
2.74 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of Ward's, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.07 [-0.05, 0.19]
2.75 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of Ward's, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.10 [-0.01, 0.22]
2.76 Kanggusong granule versus ipriflavone plus Caltrate (BMD of trochanter, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.05, 0.03]
2.77 Kanggusong granule versus Caltrate (BMD of trochanter, 9 months)	1	71	Mean Difference (IV, Random, 95% CI)	0.03 [-0.00, 0.06]
2.78 Gujian capsule versus alfacalcidol (BMD of trochanter, 6 months)	1	65	Mean Difference (IV, Random, 95% CI)	0.14 [0.07, 0.20]
2.79 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of trochanter, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.11 [-0.04, 0.27]
2.80 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of trochanter, 6 months)	1	30	Mean Difference (IV, Random, 95% CI)	0.19 [0.04, 0.33]
2.81 Gushukang granule versus Calcium carbonate with vitamin D chewable tablets (BMD of hip bone, 6 months)	1	39	Mean Difference (IV, Random, 95% CI)	0.02 [-0.02, 0.06]
2.82 Guli powder versus Caltrate (BMD of hip bone, 3 months, male)	1	30	Mean Difference (IV, Random, 95% CI)	0.0 [-0.04, 0.04]
2.83 Guli powder versus Caltrate (BMD of hip bone, 3 months, female)	1	30	Mean Difference (IV, Random, 95% CI)	0.03 [-0.05, 0.11]
2.84 TPF capsule versus calcium granule (BMD of distal radius, 6 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.20 [0.17, 0.23]
2.85 Jiawei Zhuangyao Jianshen tang versus compound calcium amino acid chelate capsules (BMD of calcaneus, 3 months)	1	58	Mean Difference (IV, Random, 95% CI)	0.06 [0.01, 0.11]
2.86 Liuwei Dihuang pills versus Caltrate (BMD of lumbar spine, 6 months)	1	71	Mean Difference (IV, Random, 95% CI)	0.05 [0.03, 0.07]

2.87 Bushen Jianpi Jingu decoction versus calcitonin (BMD of lumbar spine, 3 months)	1	75	Mean Difference (IV, Random, 95% CI)	0.02 [-0.09, 0.13]
2.88 Bushen Jianpi Jingu decoction versus calcitonin (BMD of femoral neck, 3 months)	1	75	Mean Difference (IV, Random, 95% CI)	0.05 [-0.02, 0.12]
2.89 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (BMD of lumbar spine, 6 months)	1	64	Mean Difference (IV, Random, 95% CI)	0.05 [0.03, 0.07]
2.90 Kangshu Jiangu granule versus Caltrate (BMD of femoral neck, 6 months)	1	76	Mean Difference (IV, Random, 95% CI)	0.08 [0.01, 0.15]
2.91 Kangshu Jiangu granule versus Caltrate (BMD of lumbar spine, 6 months)	1	76	Mean Difference (IV, Random, 95% CI)	0.11 [0.01, 0.21]
2.92 Bushen Tianjing Huoxue therapy versus Caltrate and calcitriol soft capsule (BMD of lumbar spine, 6 months)	1	61	Mean Difference (IV, Random, 95% CI)	0.04 [-0.00, 0.07]
3 T score in BMD measurement	2	330	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.12, 0.34]
3.1 Jingujian granule versus Caltrate (T score, 3 months)	1	120	Std. Mean Difference (IV, Random, 95% CI)	0.03 [-0.35, 0.41]
3.2 Jingujian granule versus Caltrate (T score, 3 months)	1	210	Std. Mean Difference (IV, Random, 95% CI)	0.16 [-0.12, 0.45]
4 Symptoms including pain, muscle fatigue and limited mobility	12		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
4.1 Jiawei Bushen Zhuangjintang versus calcium granule (3 months)	1	90	Risk Ratio (M-H, Fixed, 95% CI)	1.68 [1.28, 2.19]
4.2 Qianggu soft extract versus calcium gluconate (6 months)	1	99	Risk Ratio (M-H, Fixed, 95% CI)	1.86 [1.24, 2.80]
4.3 Kanggusong granule versus ipriflavone (3 months)	1	60	Risk Ratio (M-H, Fixed, 95% CI)	1.6 [1.07, 2.39]
4.4 Yishen Yanggan mixture versus calcium gluconate (6 months)	1	110	Risk Ratio (M-H, Fixed, 95% CI)	1.70 [1.28, 2.25]
4.5 Yinyanghuo versus conjugated oestrogens (3 to 6 months)	1	25	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.72, 1.28]
4.6 Gumiling granule versus bicarbonate calcium chewable (6 months)	1	25	Risk Ratio (M-H, Fixed, 95% CI)	4.26 [1.43, 12.72]

4.7 Jiawei Zhuangyao Jianshen tang versus compound calcium amino acid chelate capsules (3 months)	1	58	Risk Ratio (M-H, Fixed, 95% CI)	1.25 [0.94, 1.66]
4.8 Zishen Gukang pill versus Caltrate plus vitamin D (3 months)	1	60	Risk Ratio (M-H, Fixed, 95% CI)	1.27 [1.01, 1.61]
4.9 Xianling Gusong capsules versus Caltrate (3 months)	1	43	Risk Ratio (M-H, Fixed, 95% CI)	1.57 [1.03, 2.39]
4.10 Kanggusong capsule versus Caltrate (6 months)	1	80	Risk Ratio (M-H, Fixed, 95% CI)	1.51 [1.12, 2.04]
4.11 Jiangu recipe versus alendronate sodium tablets (12 months)	1	120	Risk Ratio (M-H, Fixed, 95% CI)	1.65 [1.31, 2.08]
4.12 Jingujian granule versus Caltrate (3 months)	1	100	Risk Ratio (M-H, Fixed, 95% CI)	3.15 [1.89, 5.26]
5 Oestradiol (E2)	25		Mean Difference (IV, Random, 95% CI)	Subtotals only
5.1 Kanggusong granule versus ipriflavone plus Caltrate (9 months)	1	71	Mean Difference (IV, Random, 95% CI)	12.17 [8.27, 16.07]
5.2 Kanggusong granule versus Caltrate (9 months)	1	71	Mean Difference (IV, Random, 95% CI)	11.0 [6.97, 15.03]
5.3 Strong Bone capsule versus Caltrate (3 months)	1	105	Mean Difference (IV, Random, 95% CI)	10.46 [4.29, 16.63]
5.4 Bushen Shengsui principle versus conjugated oestrogens plus medroxyprogesterone (6 months)	1	66	Mean Difference (IV, Random, 95% CI)	4.0 [-3.92, 11.92]
5.5 Bushen Qiangshen pill versus Caltrate (3 months)	1	30	Mean Difference (IV, Random, 95% CI)	6.71 [-2.28, 15.70]
5.6 Qianggu soft extract versus calcium gluconate (6 months)	1	99	Mean Difference (IV, Random, 95% CI)	4.20 [0.89, 7.51]
5.7 Gukang oral liquid versus alendronate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	3.90 [-6.64, 14.44]
5.8 Gumikang capsule versus calcium gluconate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	3.5 [1.14, 5.86]
5.9 Bushen Yigu soft extract versus Alfacalcidol (3 months)	1	74	Mean Difference (IV, Random, 95% CI)	76.29 [31.19, 121.39]
5.10 Kanggusong granule versus ipriflavone (3 months)	1	60	Mean Difference (IV, Random, 95% CI)	4.18 [-13.85, 22.21]
5.11 Yanghuo Sanzi tang versus Caltrate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	23.07 [17.83, 28.31]
5.12 Gusong recipe versus alendronate sodium tablets (5 months)	1	40	Mean Difference (IV, Random, 95% CI)	3.90 [-9.01, 16.81]
5.13 Gushukang granule versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	13.98 [3.90, 24.06]
5.14 Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (6 months)	1	141	Mean Difference (IV, Random, 95% CI)	3.15 [0.28, 6.02]

5.15 Prescription for tonifying kidney versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	14.00 [3.68, 24.32]
5.16 Kidney meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	11.99 [1.15, 22.83]
5.17 Urinary bladder meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	17.99 [7.65, 28.33]
5.18 Huangqi Sanxian tang versus nilestriol (3 months)	1	50	Mean Difference (IV, Random, 95% CI)	-32.97 [-39.42, -26.52]
5.19 Gukang oral liquid versus alendronate sodium tablets (6 months)	1	70	Mean Difference (IV, Random, 95% CI)	5.09 [2.81, 7.37]
5.20 Gukang decoction versus alendronate sodium tablets (4 months)	1	83	Mean Difference (IV, Random, 95% CI)	-0.65 [-9.04, 7.74]
5.21 Jianshenfang granule versus alendronate sodium (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	5.83 [4.21, 7.45]
5.22 Jiangu recipe versus alendronate sodium tablets (6 months)	1	120	Mean Difference (IV, Random, 95% CI)	5.82 [3.69, 7.95]
5.23 Jiangu recipe versus alendronate sodium tablets (12 months)	1	120	Mean Difference (IV, Random, 95% CI)	10.75 [8.55, 12.95]
5.24 Bushen Zhuanggu tang versus alendronate sodium tablets (3 months)	1	60	Mean Difference (IV, Random, 95% CI)	5.37 [2.07, 8.67]
5.25 Bushen Huoxue capsule versus Caltrate and Rocalirol (12 months)	1	59	Mean Difference (IV, Random, 95% CI)	2.13 [0.42, 3.84]
5.26 Jingujian granule versus Caltrate (3 months)	1	210	Mean Difference (IV, Random, 95% CI)	4.85 [4.56, 5.14]
5.27 Qianggu paste versus calcium gluconate tablets (6 months)	1	123	Mean Difference (IV, Random, 95% CI)	4.20 [1.79, 6.61]
5.28 Tongbu Qianggutang versus calcium plus vitamin D3 (female, 3 months)	1	18	Mean Difference (IV, Random, 95% CI)	5.03 [-8.01, 18.07]
5.29 Tongbu Qianggutang versus calcium plus vitamin D3 (male, 3 months)	1	22	Mean Difference (IV, Random, 95% CI)	1.89 [-17.98, 21.77]
5.30 Gujian capsule versus alfacalcidol (6 months)	1	58	Mean Difference (IV, Random, 95% CI)	22.35 [-10.51, 55.21]
5.31 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (6 months)	1	64	Mean Difference (IV, Random, 95% CI)	8.78 [0.92, 16.64]
6 Serum calcium (Ca)	22		Mean Difference (IV, Random, 95% CI)	Subtotals only

6.1 Kanggusong granule versus ipriflavone plus Caltrate (9 months)	1	71	Mean Difference (IV, Random, 95% CI)	-0.09 [-0.17, -0.01]
6.2 Kanggusong granule versus Caltrate (9 months)	1	71	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.11, 0.05]
6.3 Gushukang granule versus Calcium carbonate with vitamin D chewable tablets (6 months)	1	39	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.10, 0.06]
6.4 Strong Bone capsule versus Caltrate (3 months)	1	105	Mean Difference (IV, Random, 95% CI)	-0.13 [-0.22, -0.04]
6.5 Qianggu soft extract versus calcium gluconate (6 months)	1	99	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.05, -0.01]
6.6 Gumikang capsule versus calcium gluconate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	1.40 [1.39, 1.41]
6.7 Bushen Jianpi Migu prescription versus Caltrate (3 months)	1	150	Mean Difference (IV, Random, 95% CI)	0.01 [-0.05, 0.07]
6.8 Kanggusong granule versus ipriflavone (3 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.10 [0.03, 0.17]
6.9 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (6 months)	1	44	Mean Difference (IV, Random, 95% CI)	0.10 [-0.05, 0.25]
6.10 Yinyanghuo versus conjugated oestrogens (3 to 6 months)	1	25	Mean Difference (IV, Random, 95% CI)	0.54 [0.23, 0.85]
6.11 Gushukang granule versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.07, 0.03]
6.12 Shenyao capsules versus Caltrate (6 months)	1	100	Mean Difference (IV, Random, 95% CI)	0.02 [-0.08, 0.12]
6.13 Guli powder versus Caltrate (3 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.09 [0.02, 0.16]
6.14 Prescription for tonifying kidney versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.0 [-0.05, 0.05]
6.15 Kidney meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.06, 0.04]
6.16 Urinary bladder meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.06, 0.04]
6.17 Gushen Yijing tang versus Caltrate (6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.23 [0.11, 0.35]
6.18 Gukang oral liquid versus alendronate sodium tablets (6 months)	1	70	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.06, 0.02]
6.19 Qianggu capsule versus active vitamin D3 (6 months)	1	54	Mean Difference (IV, Random, 95% CI)	0.01 [-0.06, 0.08]
6.20 Jiangu capsule versus Caltrate (12 months)	1	125	Mean Difference (IV, Random, 95% CI)	-0.06 [-0.11, -0.01]

6.21 Bushen Yangxue tang versus calcium gluconate (6 months)	1	40	Mean Difference (IV, Random, 95% CI)	0.13 [-.00, 0.26]
6.22 Bushenjianpi Zhuangguyin versus Caltrate and calcitonin (12 weeks)	1	100	Mean Difference (IV, Random, 95% CI)	0.74 [0.66, 0.82]
6.23 Erxian soup versus Caltrate (6 months)	1	58	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.25, 0.21]
6.24 Qianggu paste versus calcium gluconate tablets (6 months)	1	123	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.06, -0.00]
6.25 Tongbu Qianggutang versus calcium plus vitamin D3 (3 months)	1	40	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.10, 0.06]
6.26 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (6 months)	1	64	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.05, 0.03]
7 Phosphorus (P)	17		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
7.1 Kanggusong granule versus ipriflavone plus Caltrate (9 months)	1	71	Mean Difference (IV, Fixed, 95% CI)	0.06 [-0.03, 0.15]
7.2 Kanggusong granule versus Caltrate (9 months)	1	71	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.29, 0.27]
7.3 Gushukang granule versus Calcium carbonate with vitamin D chewable tablets (6 months)	1	39	Mean Difference (IV, Fixed, 95% CI)	0.01 [-0.09, 0.11]
7.4 Strong Bone capsule versus Caltrate (3 months)	1	105	Mean Difference (IV, Fixed, 95% CI)	-0.12 [-0.21, -0.03]
7.5 Bushen Jianpi Migu prescription versus Caltrate (3 months)	1	150	Mean Difference (IV, Fixed, 95% CI)	0.03 [-0.02, 0.08]
7.6 Kanggusong granule versus ipriflavone (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.07 [-0.20, 0.06]
7.7 Yinyanghuo versus conjugated oestrogens (3 to 6 months)	1	25	Mean Difference (IV, Fixed, 95% CI)	0.13 [-0.13, 0.39]
7.8 Shenyao capsules versus Caltrate (6 months)	1	100	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.08, 0.06]
7.9 Gushukang granule versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.13, 0.11]
7.10 Guli powder versus Caltrate (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.05 [-0.13, 0.03]
7.11 Prescription for tonifying kidney versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.04 [-0.15, 0.07]
7.12 Kidney meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.13, 0.11]

7.13 Urinary bladder meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.13, 0.11]
7.14 Gushen Yijing tang versus Caltrate (6 months)	1	80	Mean Difference (IV, Fixed, 95% CI)	0.04 [-0.09, 0.17]
7.15 Qianggu capsule versus active vitamin D3 (6 months)	1	54	Mean Difference (IV, Fixed, 95% CI)	0.02 [-0.05, 0.09]
7.16 Jiangu capsule versus Caltrate (12 months)	1	125	Mean Difference (IV, Fixed, 95% CI)	0.09 [-0.20, 0.38]
7.17 Bushenzhuanggu decoction versus alendronate sodium tablets (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.24 [0.10, 0.38]
7.18 Bushenjianpi Zhuangguyin versus Caltrate and calcitonin (12 weeks)	1	100	Mean Difference (IV, Fixed, 95% CI)	-0.37 [-0.48, -0.26]
7.19 Erxian soup versus Caltrate (6 months)	1	58	Mean Difference (IV, Fixed, 95% CI)	-0.03 [-0.20, 0.14]
7.20 Tongbu Qianggutang versus calcium plus vitamin D3 (3 months)	1	40	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.12, 0.10]
7.21 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (6 months)	1	64	Mean Difference (IV, Fixed, 95% CI)	0.0 [-0.15, 0.15]
8 Alkaline phosphatase (ALP)	32		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
8.1 Kanggusong granule versus ipriflavone plus Caltrate (9 months)	1	71	Mean Difference (IV, Fixed, 95% CI)	1.69 [0.79, 2.59]
8.2 Kanggusong granule versus Caltrate (9 months)	1	71	Mean Difference (IV, Fixed, 95% CI)	1.28 [0.30, 2.26]
8.3 Gushukang granule versus Calcium carbonate with vitamin D chewable tablets (6 months)	1	39	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-1.70, 0.70]
8.4 Strong Bone capsule versus Caltrate (3 months)	1	105	Mean Difference (IV, Fixed, 95% CI)	-0.07 [-0.25, 0.11]
8.5 Bushen Qiangshen pill versus Caltrate (3 months)	1	30	Mean Difference (IV, Fixed, 95% CI)	0.27 [-1.27, 1.81]
8.6 Qianggu soft extract versus calcium gluconate (6 months)	1	99	Mean Difference (IV, Fixed, 95% CI)	3.60 [2.62, 4.58]
8.7 Gukang oral liquid versus alendronate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-1.06 [-2.54, 0.42]
8.8 Gumikang capsule versus calcium gluconate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	3.41 [2.84, 3.98]
8.9 Bushen Jianpi Migu prescription versus Caltrate (3 months)	1	150	Mean Difference (IV, Fixed, 95% CI)	0.10 [0.01, 0.19]
8.10 Kanggusong granule versus ipriflavone (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.13 [-0.07, 0.33]

8.11 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (6 months)	1	44	Mean Difference (IV, Fixed, 95% CI)	-0.29 [-1.67, 1.09]
8.12 Liuwei Dihuang pills versus calcium (12 months)	1	42	Mean Difference (IV, Fixed, 95% CI)	0.55 [-0.12, 1.22]
8.13 TPF capsule versus calcium granule (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	3.84 [2.53, 5.15]
8.14 Yinyanghuo versus conjugated oestrogens (3 to 6 months)	1	25	Mean Difference (IV, Fixed, 95% CI)	-7.0 [-11.17, -2.83]
8.15 Gusong recipe versus alendronate sodium tablets (5 months)	1	40	Mean Difference (IV, Fixed, 95% CI)	-1.05 [-2.86, 0.76]
8.16 Shenyao capsules versus Caltrate (6 months)	1	100	Mean Difference (IV, Fixed, 95% CI)	-2.40 [-3.58, -1.22]
8.17 Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (6 months)	1	141	Mean Difference (IV, Fixed, 95% CI)	-2.94 [-4.34, -1.54]
8.18 Guli powder versus Caltrate (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.30 [-2.97, 3.57]
8.19 Huangqi Sanxian tang versus nilestriol (3 months)	1	50	Mean Difference (IV, Fixed, 95% CI)	-0.03 [-1.14, 1.08]
8.20 Gushen Yijing tang versus Caltrate (6 months)	1	80	Mean Difference (IV, Fixed, 95% CI)	2.17 [0.73, 3.61]
8.21 Gukang oral liquid versus alendronate sodium Tablets	1	70	Mean Difference (IV, Fixed, 95% CI)	0.48 [-0.34, 1.30]
8.22 Qianggu capsule versus active vitamin D3 (6 months)	1	54	Mean Difference (IV, Fixed, 95% CI)	0.71 [-1.17, 2.59]
8.23 Jiangu capsule versus Caltrate (12 months)	1	125	Mean Difference (IV, Fixed, 95% CI)	2.04 [1.32, 2.76]
8.24 Jianshenfang granule versus alendronate sodium tablets (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.33 [-2.79, 3.45]
8.25 Jingujian granule versus Caltrate (3 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	0.53 [-0.69, 1.75]
8.26 Jianshenfang granule versus alendronate sodium tablets (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.33 [-2.78, 3.44]
8.27 Bushen Zhuanggu tang versus alendronate sodium tablets (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.11 [-0.99, 0.77]
8.28 Bushenjianpi Zhuangguyin versus Caltrate and calcitonin (12 weeks)	1	100	Mean Difference (IV, Fixed, 95% CI)	-0.82 [-2.83, 1.19]
8.29 Jingujian granule versus Caltrate (3 months)	1	210	Mean Difference (IV, Fixed, 95% CI)	2.40 [2.21, 2.59]
8.30 Erxian soup versus Caltrate (6 months)	1	58	Mean Difference (IV, Fixed, 95% CI)	0.0 [-0.87, 0.87]

8.31 Qianggu paste versus calcium gluconate tablets (6 months)	1	123	Mean Difference (IV, Fixed, 95% CI)	3.60 [2.86, 4.34]
8.32 Bushen Yangxue tang versus calcium gluconate (6 months)	1	40	Mean Difference (IV, Fixed, 95% CI)	2.62 [0.84, 4.40]
8.33 Tongbu Qianggutang versus calcium plus vitamin D3 (3 months)	1	40	Mean Difference (IV, Fixed, 95% CI)	0.18 [-1.08, 1.44]
8.34 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (6 months)	1	64	Mean Difference (IV, Fixed, 95% CI)	0.91 [0.15, 1.67]
9 Bone Gla protein (BGP)	14		Mean Difference (IV, Random, 95% CI)	Subtotals only
9.1 Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (6 months)	1	141	Mean Difference (IV, Random, 95% CI)	-2.13 [-2.74, -1.52]
9.2 Acupoint sticking of Migudan versus oyster shell calcium chewable tablets (3 months)	1	96	Mean Difference (IV, Random, 95% CI)	1.55 [1.24, 1.86]
9.3 Gukang oral liquid versus alendronate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.93, 0.73]
9.4 Gusong recipe versus alendronate sodium tablets (5 months)	1	40	Mean Difference (IV, Random, 95% CI)	-0.10 [-1.11, 0.91]
9.5 Yanghuo Sanzi tang versus Caltrate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	2.71 [-0.30, 5.72]
9.6 Strong Bone capsule versus Caltrate (3 months)	1	105	Mean Difference (IV, Random, 95% CI)	-0.49 [-2.17, 1.19]
9.7 Shigu yin versus Caltrate (6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.80 [-0.34, 1.94]
9.8 Jingujian granule versus Caltrate (3 months)	1	120	Mean Difference (IV, Random, 95% CI)	2.53 [-0.38, 5.44]
9.9 Jianshenfang granule versus alendronate sodium (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.49 [-1.59, 2.57]
9.10 Jiangu recipe versus alendronate sodium tablets (12 months)	1	120	Mean Difference (IV, Random, 95% CI)	1.81 [-0.31, 3.93]
9.11 Bushen Huoxue capsules versus Caltrate and Rocalirol (12 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.93 [0.35, 1.51]
9.12 Kanggusong capsule versus Caltrate (6 months)	1	80	Mean Difference (IV, Random, 95% CI)	1.78 [0.40, 3.16]
9.13 Liuwei Dihuang pills versus calcium (12 months)	1	42	Mean Difference (IV, Random, 95% CI)	17.9 [12.43, 23.37]
9.14 Tongbu Qianggutang versus calcium plus vitamin D3 (3 months)	1	40	Mean Difference (IV, Random, 95% CI)	-1.50 [-5.07, 2.08]
10 Interleukin-6 (IL-6)	7		Mean Difference (IV, Fixed, 95% CI)	Subtotals only

10.1 Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (6 months)	1	141	Mean Difference (IV, Fixed, 95% CI)	-5.72 [-14.05, 2.61]
10.2 Gukang oral liquid versus alendronate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-3.5 [-15.93, 8.93]
10.3 Yanghuo Sanzi tang versus Caltrate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-20.29 [-35.67, -4.91]
10.4 Jianshenfang granule versus alendronate sodium (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-12.56 [-29.26, 4.14]
10.5 Jiangu recipe versus alendronate sodium tablets (12 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	-19.99 [-30.92, -9.06]
10.6 Bushen Huoxue capsules versus Caltrate and Rocalirol (12 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-18.70 [-34.16, -3.24]
10.7 Gusong recipe versus alendronate sodium tablets (5 months)	1	40	Mean Difference (IV, Fixed, 95% CI)	-3.5 [-18.72, 11.72]
11 Parathyroid hormone (PTH)	6		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
11.1 Prescription for tonifying kidney versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-13.0 [-41.67, 15.67]
11.2 Kidney meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-13.01 [-41.95, 15.93]
11.3 Urinary bladder meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-3.01 [-31.44, 25.42]
11.4 Kanggusong granule versus ipriflavone (3 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	11.81 [-14.64, 38.26]
11.5 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (6 months)	1	44	Mean Difference (IV, Fixed, 95% CI)	-10.63 [-140.92, 119.66]
11.6 TPF capsule versus calcium granule (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	-254.0 [-399.06, -108.94]
11.7 Gujian capsule versus alfacalcidol (6 months)	1	48	Mean Difference (IV, Fixed, 95% CI)	-22.57 [-60.92, 15.78]
11.8 Gushukang granule versus ipriflavone (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-3.02 [-30.91, 24.87]
11.9 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (6 months)	1	64	Mean Difference (IV, Fixed, 95% CI)	-2.06 [-6.74, 2.62]
12 Computed tomography (CT)	8		Mean Difference (IV, Random, 95% CI)	Subtotals only
12.1 Prescription for tonifying kidney versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.96 [-3.71, 5.63]
12.2 Kidney meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-1.01 [-5.44, 3.42]

12.3 Urinary bladder meridian sticking versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.01 [-4.68, 4.66]
12.4 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (6 months)	1	44	Mean Difference (IV, Random, 95% CI)	15.93 [-24.16, 56.02]
12.5 Strong Bone capsule versus Caltrate (3 months)	1	105	Mean Difference (IV, Random, 95% CI)	16.25 [10.43, 22.07]
12.6 Jingujian granule versus Caltrate (3 months)	1	210	Mean Difference (IV, Random, 95% CI)	21.98 [17.01, 26.95]
12.7 TPF capsule versus Calcium granule (6 months)	1	120	Mean Difference (IV, Random, 95% CI)	17.71 [11.53, 23.89]
12.8 Tongbu Qianggutang versus calcium plus vitamin D3 (3 months)	1	40	Mean Difference (IV, Random, 95% CI)	-6.18 [-12.89, 0.52]
12.9 Gujian capsule versus alfacalcidol (6 months)	1	57	Mean Difference (IV, Random, 95% CI)	-12.77 [-70.92, 45.38]
12.10 Gushukang granule versus ipriflavone (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	-0.01 [-4.44, 4.42]
12.11 Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets (6 months)	1	64	Mean Difference (IV, Random, 95% CI)	0.11 [-0.04, 0.26]

Comparison 4. Chinese herbal medicines plus western medicine versus western medicine

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 New fractures	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 Yigu capsule plus calcium versus placebo plus calcium (6 months)	1	140	Risk Ratio (M-H, Fixed, 95% CI)	0.06 [0.00, 1.00]
1.2 Xianlinggubao capsule (low-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (12 months)	1	120	Risk Ratio (M-H, Fixed, 95% CI)	0.33 [0.01, 8.02]
1.3 Xianlinggubao capsule (high-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (12 months)	1	116	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.01, 8.58]
1.4 Bushen Zhuanggu granules plus calcium and vitamin D versus placebo granules plus calcium and vitamin D (5 years)	1	155	Risk Ratio (M-H, Fixed, 95% CI)	0.44 [0.13, 1.43]

1.5 Kanggusong soup plus Caltrate versus Caltrate (3 months)	1	75	Risk Ratio (M-H, Fixed, 95% CI)	0.22 [0.01, 5.34]
1.6 Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin versus calcitonin (12 months)	1	90	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Bone mineral density (BMD)	43		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1 Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol (BMD of lumbar spine, 6 months)	1	64	Mean Difference (IV, Random, 95% CI)	0.06 [0.01, 0.11]
2.2 Jiarong tablet plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	41	Mean Difference (IV, Random, 95% CI)	0.04 [-0.05, 0.14]
2.3 Ziyin Bushen Zhuanggu prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin (BMD of lumbar spine, 8 months)	1	45	Mean Difference (IV, Random, 95% CI)	0.14 [0.08, 0.20]
2.4 Zhuanggu capsule plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.01 [0.00, 0.02]
2.5 Antai capsule plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	128	Mean Difference (IV, Random, 95% CI)	0.04 [-0.00, 0.08]
2.6 Bushen Zhuanggutang plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.14 [0.06, 0.22]
2.7 Zishen prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin (BMD of lumbar spine, 8 months)	1	45	Mean Difference (IV, Random, 95% CI)	0.14 [0.08, 0.20]
2.8 Guilu Erxiantang plus calcium carbonate tablet versus calcium carbonate tablet (BMD of lumbar spine, 6 months)	1	85	Mean Difference (IV, Random, 95% CI)	0.03 [-0.03, 0.09]
2.9 Guben Zhuanggu capsules plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.03 [0.01, 0.05]
2.10 Migu tablet plus Caltrate versus Caltrate (BMD of Lumbar spine, 12 months)	1	44	Mean Difference (IV, Random, 95% CI)	0.08 [0.07, 0.09]
2.11 Shugan zishen huoxue tang plus Caltrate and alendronate sodium versus Caltrate plus alendronate sodium (BMD of lumbar spine, 6 months)	1	42	Mean Difference (IV, Random, 95% CI)	0.12 [0.08, 0.16]

2.12 Bushen Yangxue tang plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.02 [-0.02, 0.06]
2.13 Bushen Kangsong pill plus calcium carbonate tablets versus calcium carbonate tablets (BMD of lumbar spine, 6 months)	1	84	Mean Difference (IV, Random, 95% CI)	0.01 [-0.03, 0.04]
2.14 Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of lumbar spine, 6 months)	1	96	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.07, 0.05]
2.15 Qianggu capsule plus alendronate versus alendronate (BMD of lumbar spine, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.08 [0.03, 0.12]
2.16 Xianlinggubao capsule plus Caltrate versus Caltrate (BMD of lumbar spine, 12 months)	1	68	Mean Difference (IV, Random, 95% CI)	0.30 [0.25, 0.35]
2.17 Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate (BMD of lumbar spine, 3 months)	1	107	Mean Difference (IV, Random, 95% CI)	0.03 [-0.03, 0.09]
2.18 Xianlinggubao capsule plus alendronate versus alendronate (BMD of lumbar spine, 6 months)	1	104	Mean Difference (IV, Random, 95% CI)	0.06 [0.03, 0.09]
2.19 Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate (BMD of lumbar spine, 48 weeks)	1	112	Mean Difference (IV, Random, 95% CI)	0.01 [-0.03, 0.06]
2.20 Xianlinggubao capsule plus Caltrate versus Caltrate (BMD of lumbar spine, 12 months)	1	136	Mean Difference (IV, Random, 95% CI)	0.31 [0.28, 0.34]
2.21 Xianlinggubao capsule plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule (BMD of lumbar spine, 6 months)	1	106	Mean Difference (IV, Random, 95% CI)	0.18 [0.14, 0.22]

2.22 Jiangu granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of lumbar spine, 6 months)	1	96	Mean Difference (IV, Random, 95% CI)	0.04 [-0.02, 0.10]
2.23 Jinwugutong capsules plus calcium versus placebo plus calcium (BMD of lumbar spine, 6 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.11 [0.07, 0.15]
2.24 Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet (BMD of lumbar spine, 6 months)	1	480	Mean Difference (IV, Random, 95% CI)	0.02 [-0.01, 0.05]
2.25 Chinese medicine Bushenhuoxue recipe plus conventional western medicine versus conventional western medicine (BMD of lumbar spine, 3 months)	1	57	Mean Difference (IV, Random, 95% CI)	0.16 [0.09, 0.22]
2.26 Gusongbao granule plus calcium tablet versus placebo plus calcium tablet (BMD of lumbar spine, 6 months)	1	240	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.05, 0.03]
2.27 Shengsuiyin recipe plus Caltrate versus Caltrate (BMD of Lumbar spine, 12 months)	1	144	Mean Difference (IV, Random, 95% CI)	0.31 [0.28, 0.34]
2.28 Yigu capsule plus calcium versus placebo plus calcium (BMD of lumbar spine, 6 months)	1	140	Mean Difference (IV, Random, 95% CI)	0.08 [0.04, 0.12]
2.29 Chinese medicine (combination of 10 herbs) plus tamoxifen and Caltrate versus tamoxifen and Caltrate (BMD of lumbar spine, 3 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.10 [0.06, 0.14]
2.30 Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin versus calcitonin (BMD of lumbar spine, 12 months)	1	90	Mean Difference (IV, Random, 95% CI)	0.01 [-0.04, 0.06]
2.31 Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule (BMD of lumbar spine, 6 months)	1	107	Mean Difference (IV, Random, 95% CI)	0.17 [0.14, 0.20]
2.32 Huangqi plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	36	Mean Difference (IV, Random, 95% CI)	0.06 [0.01, 0.11]

2.33 Jiarong tablet plus Caltrate versus Caltrate (BMD of femoral neck, 6 months)	1	41	Mean Difference (IV, Random, 95% CI)	0.09 [0.02, 0.15]
2.34 Antai capsule plus Caltrate versus Caltrate (BMD of femoral neck, 6 months)	1	128	Mean Difference (IV, Random, 95% CI)	0.01 [-0.02, 0.04]
2.35 Xianlinggubao capsule plus Caltrate versus Caltrate (BMD of femoral neck, 12 months)	1	68	Mean Difference (IV, Random, 95% CI)	0.3 [0.25, 0.35]
2.36 Guben Zhuanggu capsules plus Caltrate versus Caltrate (BMD of femoral neck, 6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.01 [-0.01, 0.02]
2.37 Migu tablet plus Caltrate versus Caltrate (BMD of femoral neck, 12 months)	1	44	Mean Difference (IV, Random, 95% CI)	0.09 [0.08, 0.10]
2.38 Qianggu capsules plus oestradiol valerate versus oestradiol valerate (BMD of femoral neck, 6 months)	1	88	Mean Difference (IV, Random, 95% CI)	0.03 [-0.01, 0.07]
2.39 Chinese medicine Bushenhuoxue recipe plus conventional western medicine versus conventional western medicine (BMD of femoral neck, 3 months)	1	57	Mean Difference (IV, Random, 95% CI)	0.17 [0.12, 0.23]
2.40 Heche Dazao pill plus oyster shell calcium chewable tablets versus oyster shell calcium chewable tablets (BMD of femoral neck, 3 months)	1	114	Mean Difference (IV, Random, 95% CI)	0.04 [0.00, 0.07]
2.41 Xianlinggubao capsule plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)	1	106	Mean Difference (IV, Random, 95% CI)	0.26 [0.22, 0.30]
2.42 Huangqi plus Caltrate versus Caltrate (BMD of femoral neck, 6 months)	1	36	Mean Difference (IV, Random, 95% CI)	0.07 [0.03, 0.11]
2.43 Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)	1	96	Mean Difference (IV, Random, 95% CI)	0.01 [-0.03, 0.05]

2.44 Jiangu granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)	1	96	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.07, 0.03]
2.45 Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet (BMD of femoral neck, 6 months)	1	480	Mean Difference (IV, Random, 95% CI)	0.01 [-0.01, 0.03]
2.46 Gusongbao granule plus calcium tablet versus placebo plus calcium tablet (BMD of femoral neck, 6 months)	1	240	Mean Difference (IV, Random, 95% CI)	0.0 [-0.03, 0.03]
2.47 Yigu capsule plus calcium versus placebo plus calcium (BMD of femoral neck, 6 months)	1	140	Mean Difference (IV, Random, 95% CI)	0.04 [0.01, 0.07]
2.48 Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)	1	107	Mean Difference (IV, Random, 95% CI)	0.24 [0.21, 0.27]
2.49 Antai capsule plus Caltrate versus Caltrate (BMD of Ward's, 6 months)	1	128	Mean Difference (IV, Random, 95% CI)	0.0 [-0.03, 0.03]
2.50 Migu tablet plus Caltrate versus Caltrate (BMD of Ward's, 12 months)	1	44	Mean Difference (IV, Random, 95% CI)	0.09 [0.08, 0.10]
2.51 Qianggu capsule plus alendronate versus alendronate (BMD of Ward's, 6 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.05 [0.02, 0.07]
2.52 Xianlinggubao capsule plus alendronate versus alendronate (BMD of Ward's, 6 months)	1	104	Mean Difference (IV, Random, 95% CI)	0.04 [0.02, 0.06]
2.53 Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of Ward's, 6 months)	1	96	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.06, 0.04]
2.54 Xianlinggubao capsule plus compound calcium amino acid chelate capsules versus compound calcium amino acid chelate capsules (BMD of Ward's, 6 months)	1	106	Mean Difference (IV, Random, 95% CI)	0.23 [0.19, 0.27]

2.55 Migu tablet plus compound calcium amino acid chelate capsules versus compound calcium amino acid chelate capsules (BMD of Ward's, 6 months)	1	107	Mean Difference (IV, Random, 95% CI)	0.28 [0.24, 0.32]
2.56 Jiangu granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of Ward's, 6 months)	1	96	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.06, 0.04]
2.57 Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet (BMD of Ward's, 6 months)	1	480	Mean Difference (IV, Random, 95% CI)	0.02 [-0.00, 0.04]
2.58 Gusongbao granule plus calcium tablet versus placebo plus calcium tablet (BMD of Ward's, 6 months)	1	240	Mean Difference (IV, Random, 95% CI)	0.01 [-0.02, 0.04]
2.59 Yigu capsule plus calcium versus placebo plus calcium (BMD of Ward's, 6 months)	1	140	Mean Difference (IV, Random, 95% CI)	0.04 [0.00, 0.08]
2.60 Antai capsule plus Caltrate versus Caltrate (BMD of trochanter, 6 months)	1	128	Mean Difference (IV, Random, 95% CI)	0.03 [0.00, 0.06]
2.61 Migu tablet plus Caltrate versus Caltrate (BMD of trochanter, 12 months)	1	44	Mean Difference (IV, Random, 95% CI)	0.15 [0.14, 0.16]
2.62 Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet (BMD of trochanter, 6 months)	1	480	Mean Difference (IV, Random, 95% CI)	0.0 [-0.02, 0.02]
2.63 Migu tablet plus compound calcium amino acid chelate capsules versus compound calcium amino acid chelate capsules (BMD of trochanter, 6 months)	1	107	Mean Difference (IV, Random, 95% CI)	0.12 [0.07, 0.17]
2.64 Xianlinggubao capsule plus compound calcium amino acid chelate capsules versus compound calcium amino acid chelate capsules (BMD of trochanter, 6 months)	1	106	Mean Difference (IV, Random, 95% CI)	0.13 [0.08, 0.18]
2.65 Gusongbao granule plus calcium tablet versus placebo plus calcium tablet (BMD of trochanter, 6 months)	1	240	Mean Difference (IV, Random, 95% CI)	0.0 [-0.03, 0.03]

2.66 Yigu capsule plus calcium versus placebo plus calcium (BMD of trochanter, 6 months)	1	140	Mean Difference (IV, Random, 95% CI)	0.02 [-0.02, 0.06]
2.67 Gushukang granule plus Calcium carbonate with vitamin D chewable tablets versus Calcium carbonate with vitamin D chewable tablets (BMD of hip bone, 6 months)	1	42	Mean Difference (IV, Random, 95% CI)	0.15 [0.11, 0.19]
2.68 Jinwugutong capsules plus calcium versus placebo plus calcium (BMD of hip bone, 6 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.01 [-0.02, 0.04]
2.69 Gengnian Anyi tablet plus Caltrate versus Caltrate (BMD of distal radius, 6 months)	1	42	Mean Difference (IV, Random, 95% CI)	0.01 [-0.06, 0.08]
2.70 Shangke Yishen Zhuanggu pill plus Caltrate and calcitonin versus Caltrate and calcitonin (BMD of lumbar spine, 3 months)	1	300	Mean Difference (IV, Random, 95% CI)	0.04 [0.03, 0.05]
2.71 Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol versus calcium carbonate tablets and alfacalcidol (BMD of lumbar spine, 3 months)	1	80	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.04, 0.02]
2.72 Gukang tablet plus oyster shell calcium chewable tablets and vitamin A and D capsules versus oyster shell calcium chewable tablets and vitamin A and D capsules (BMD of lumbar spine, for 3 months)	1	80	Mean Difference (IV, Random, 95% CI)	0.24 [0.14, 0.34]
2.73 Liuwei Dihuang pills plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)	1	72	Mean Difference (IV, Random, 95% CI)	0.05 [0.02, 0.08]
2.74 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (BMD of lumbar spine,3 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.02 [-0.01, 0.05]
2.75 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (BMD of femoral neck, 3 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.01 [-0.01, 0.03]

2.76 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (BMD of trochanter, 3 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.02 [0.01, 0.04]
2.77 Yishen Zhuanggu decoction plus calcitriol soft capsule versus calcitriol soft capsule (BMD of lumbar spine, 3 months)	1	100	Mean Difference (IV, Random, 95% CI)	0.02 [-.00, 0.05]
2.78 Hugu capsule plus Caltrate versus placebo capsule plus Caltrate (BMD of lumbar spine, 6 months)	1	122	Mean Difference (IV, Random, 95% CI)	0.03 [-0.00, 0.06]
2.79 Hugu capsule plus Caltrate versus placebo capsule plus Caltrate (BMD of Ward's, 6 months)	1	122	Mean Difference (IV, Random, 95% CI)	0.05 [0.02, 0.08]
2.80 Bushen Qianggu Huoxue therapy plus calcium and cod liver oil versus calcium and cod liver oil (BMD of lumbar spine, 3 months)	1	84	Mean Difference (IV, Random, 95% CI)	0.05 [-0.01, 0.11]
2.81 Bushen Qianggu Huoxue therapy plus calcium and cod liver oil versus calcium and cod liver oil (BMD of femoral neck, 3 months)	1	84	Mean Difference (IV, Random, 95% CI)	0.02 [-0.02, 0.05]
2.82 Bushen Qianggu Huoxue therapy plus calcium and cod liver oil versus calcium and cod liver oil (BMD of Ward's, 3 months)	1	84	Mean Difference (IV, Random, 95% CI)	0.04 [0.02, 0.07]
2.83 Xianlinggubao capsule (low-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (BMD of lumbar spine, 12 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.0 [-0.04, 0.04]
2.84 Xianlinggubao capsule (high-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (BMD of lumbar spine, 12 months)	1	116	Mean Difference (IV, Random, 95% CI)	0.0 [-0.03, 0.03]
2.85 Xianlinggubao capsule (low-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (BMD of femoral neck, 12 months)	1	120	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.05, 0.03]

2.86 Xianlinggubao capsule (high-dose) plus calcium and vitamin D versus placebo plus calcium and vitamin D (BMD of femoral neck, 12 months)	1	116	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.05, 0.03]
2.87 Bushen Zhuanggu granules plus calcium and vitamin D versus placebo granules plus calcium and vitamin D (BMD of distal radius, 5 years)	1	155	Mean Difference (IV, Random, 95% CI)	0.10 [0.09, 0.10]
3 T score in BMD measurement	1	67	Mean Difference (IV, Fixed, 95% CI)	0.91 [0.57, 1.25]
3.1 Erxian Yanggu decoction plus alendronate sodium tablets versus alendronate sodium tablets (T score, 6 months)	1	67	Mean Difference (IV, Fixed, 95% CI)	0.91 [0.57, 1.25]
4 Quality of life	1	80	Mean Difference (IV, Fixed, 95% CI)	5.30 [3.67, 6.93]
4.1 Bushenhuoxue therapy plus calcium carbonate tablets and alfacalcidol versus calcium carbonate tablets and alfacalcidol (3 months)	1	80	Mean Difference (IV, Fixed, 95% CI)	5.30 [3.67, 6.93]
5 Symptoms including pain, muscle fatigue and limited mobility	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
5.1 Heche Dazao pill plus oyster shell calcium chewable tablets versus oyster shell calcium chewable tablets (3 months)	1	114	Risk Ratio (M-H, Fixed, 95% CI)	1.15 [1.01, 1.30]
5.2 Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate (3 months)	1	107	Risk Ratio (M-H, Fixed, 95% CI)	1.33 [1.09, 1.61]
5.3 Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin versus calcitonin (12 months)	1	82	Risk Ratio (M-H, Fixed, 95% CI)	1.01 [0.91, 1.12]
5.4 Kanggusong soup plus Caltrate versus Caltrate (3 months)	1	75	Risk Ratio (M-H, Fixed, 95% CI)	1.48 [1.09, 2.02]
6 Oestradiol (E2)	9		Mean Difference (IV, Random, 95% CI)	Subtotals only
6.1 Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol (6 months)	1	64	Mean Difference (IV, Random, 95% CI)	4.54 [0.47, 8.61]
6.2 Ziyin Bushen Zhuanggu prescription plus Caltrate and Calcitonin versus Caltrate plus Calcitonin (8 months)	1	45	Mean Difference (IV, Random, 95% CI)	23.21 [14.46, 31.96]

6.3 Zhuanggu capsule plus Caltrate versus Caltrate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	4.06 [2.56, 5.56]
6.4 Bushen Qiangshen pill plus Caltrate versus Caltrate (3 months)	1	40	Mean Difference (IV, Random, 95% CI)	7.60 [-0.51, 15.71]
6.5 Antai capsule plus Caltrate versus Caltrate (6 months)	1	128	Mean Difference (IV, Random, 95% CI)	11.0 [8.14, 13.86]
6.6 Zishen prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin (8 months)	1	45	Mean Difference (IV, Random, 95% CI)	23.21 [14.46, 31.96]
6.7 Shugan zishen huoxue tang plus Caltrate and alendronate sodium tablets versus Caltrate plus alendronate sodium tablets (6 months)	1	42	Mean Difference (IV, Random, 95% CI)	26.99 [18.44, 35.54]
6.8 Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate (48 weeks)	1	112	Mean Difference (IV, Random, 95% CI)	6.04 [4.61, 7.47]
6.9 Yigu capsule plus calcium versus placebo plus calcium (6 months)	1	140	Mean Difference (IV, Random, 95% CI)	40.85 [33.61, 48.09]
7 Serum calcium (Ca)	12		Mean Difference (IV, Random, 95% CI)	Subtotals only
7.1 Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol (6 months)	1	64	Mean Difference (IV, Random, 95% CI)	0.05 [-0.02, 0.12]
7.2 Gushukang granule plus Calcium carbonate with vitamin D chewable tablets versus Calcium carbonate with vitamin D chewable tablets (6 months)	1	42	Mean Difference (IV, Random, 95% CI)	-0.01 [-0.09, 0.07]
7.3 Zhuanggu capsule plus Caltrate versus Caltrate (6 months)	1	60	Mean Difference (IV, Random, 95% CI)	0.01 [-0.07, 0.09]
7.4 Antai capsule plus Caltrate versus Caltrate (6 months)	1	128	Mean Difference (IV, Random, 95% CI)	-0.03 [-0.09, 0.03]
7.5 Jinwugutong capsules plus calcium versus placebo plus calcium (6 months)	1	120	Mean Difference (IV, Random, 95% CI)	-0.05 [-0.11, 0.01]
7.6 Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate (3 months)	1	107	Mean Difference (IV, Random, 95% CI)	0.03 [-0.09, 0.15]

7.7 Bushenyiqihuoxue soup plus tamoxifen and Caltrate versus tamoxifen and Caltrate (3 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.37 [0.32, 0.42]
7.8 Yigu capsule plus calcium versus placebo plus calcium (6 months)	1	140	Mean Difference (IV, Random, 95% CI)	-0.07 [-0.13, -0.01]
7.9 Chinese medicine (combination of 10 herbs) plus tamoxifen and Caltrate versus tamoxifen and Caltrate (3 months)	1	120	Mean Difference (IV, Random, 95% CI)	0.37 [0.32, 0.42]
7.10 Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin versus calcitonin (12 months)	1	90	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.10, 0.06]
7.11 Huangqi plus Caltrate versus Caltrate (6 months)	1	36	Mean Difference (IV, Random, 95% CI)	0.28 [0.11, 0.45]
7.12 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (3 months)	1	120	Mean Difference (IV, Random, 95% CI)	-0.02 [-0.06, 0.02]
8 Phosphorus (P)	10		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
8.1 Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol (6 months)	1	64	Mean Difference (IV, Fixed, 95% CI)	-0.13 [-0.27, 0.01]
8.2 Gushukang granule plus Calcium carbonate with vitamin D chewable tabletsl versus Calcium carbonate with vitamin D chewable tablets (6 months)	1	42	Mean Difference (IV, Fixed, 95% CI)	-0.02 [-0.11, 0.07]
8.3 Zhuanggu capsule plus Caltrate versus Caltrate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.01 [-0.06, 0.08]
8.4 Antai capsule plus Caltrate versus Caltrate (6 months)	1	128	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.23, 0.21]
8.5 Jinwugutong capsules plus calcium versus placebo plus calcium (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	-0.02 [-0.09, 0.05]
8.6 Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate (3 months)	1	107	Mean Difference (IV, Fixed, 95% CI)	0.01 [-0.12, 0.14]
8.7 Yigu capsule plus calcium versus placebo plus calcium (6 months)	1	140	Mean Difference (IV, Fixed, 95% CI)	-0.03 [-0.08, 0.02]

8.8 Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin versus calcitonin (12 months)	1	90	Mean Difference (IV, Fixed, 95% CI)	-0.02 [-0.08, 0.04]
8.9 Huangqi plus Caltrate versus Caltrate (6 months)	1	36	Mean Difference (IV, Fixed, 95% CI)	0.31 [0.14, 0.48]
8.10 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (3 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	0.06 [-0.22, 0.34]
9 Alkaline phosphatase (ALP)	15		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
9.1 Gushukang granule plus Calcium carbonate with vitamin D chewable tablets versus Calcium carbonate with vitamin D chewable tablets (6 months)	1	39	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-1.70, 0.70]
9.2 Zhuanggu capsule plus Caltrate versus Caltrate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.0 [-1.55, 1.55]
9.3 Bushen Qiangshen pill plus Caltrate versus Caltrate (3 months)	1	40	Mean Difference (IV, Fixed, 95% CI)	-0.31 [-1.72, 1.10]
9.4 Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate (3 months)	1	107	Mean Difference (IV, Fixed, 95% CI)	-0.99 [-1.52, -0.46]
9.5 Antai capsule plus Caltrate versus Caltrate (6 months)	1	128	Mean Difference (IV, Fixed, 95% CI)	1.28 [0.55, 2.01]
9.6 Traditional Chinese capsule plus calcium gluconate versus calcium gluconate (9 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	1.77 [1.20, 2.34]
9.7 Jinwugutong capsules plus calcium versus placebo plus calcium (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	1.01 [-0.04, 2.06]
9.8 Yigu capsule plus calcium versus placebo plus calcium (6 months)	1	140	Mean Difference (IV, Fixed, 95% CI)	1.73 [0.71, 2.75]
9.9 Chinese medicine (combination of 10 herbs) plus tamoxifen and Caltrate versus tamoxifen and Caltrate (3 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	-0.26 [-1.64, 1.12]
9.10 Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin versus calcitonin (12 months)	1	90	Mean Difference (IV, Fixed, 95% CI)	0.08 [-0.54, 0.70]

9.11 Bushenyiqihuoxue soup plus tamoxifen and Caltrate versus tamoxifen and Caltrate (3 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	3.54 [1.68, 5.40]
9.12 Huangqi plus Caltrate versus Caltrate (6 months)	1	36	Mean Difference (IV, Fixed, 95% CI)	0.82 [0.63, 1.01]
9.13 Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate (48 weeks)	1	112	Mean Difference (IV, Fixed, 95% CI)	10.48 [9.81, 11.15]
9.14 Kanggusong soup plus Caltrate versus Caltrate (3 months)	1	75	Mean Difference (IV, Fixed, 95% CI)	-1.61 [-3.17, -0.05]
9.15 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (3 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	0.31 [-0.48, 1.10]
10 Bone Gla protein (BGP)	8		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
10.1 Zhuanggu capsule plus Caltrate versus Caltrate (6 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	-2.3 [-4.07, -0.53]
10.2 Traditional Chinese capsule plus calcium gluconate versus calcium gluconate (9 months)	1	60	Mean Difference (IV, Fixed, 95% CI)	1.23 [0.88, 1.58]
10.3 Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate (3 months)	1	107	Mean Difference (IV, Fixed, 95% CI)	0.56 [-0.30, 1.42]
10.4 Yigu capsule plus calcium versus placebo plus calcium (6 months)	1	140	Mean Difference (IV, Fixed, 95% CI)	2.60 [1.66, 3.54]
10.5 Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate (48 weeks)	1	112	Mean Difference (IV, Fixed, 95% CI)	6.24 [5.69, 6.79]
10.6 Xianlinggubao capsule plus Caltrate versus Caltrate (12 months)	1	68	Mean Difference (IV, Fixed, 95% CI)	1.85 [0.87, 2.83]
10.7 Jinwugutong capsules plus calcium versus placebo plus calcium (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	2.47 [1.44, 3.50]
10.8 Huangqi plus Caltrate versus Caltrate (6 months)	1	36	Mean Difference (IV, Fixed, 95% CI)	0.63 [0.50, 0.76]
11 Interleukin-6 (IL-6)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only

11.1 Erxian Yanggu decoction plus alendronate sodium tablets versus alendronate sodium tablets (6 months)	1	67	Mean Difference (IV, Fixed, 95% CI)	-16.18 [-19.62, -12.74]
11.2 Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate (48 weeks)	1	112	Mean Difference (IV, Fixed, 95% CI)	-133.3 [-139.94, -126.66]
11.3 Kanggusong soup plus Caltrate versus Caltrate (3 months)	1	75	Mean Difference (IV, Fixed, 95% CI)	-16.32 [-31.60, -1.04]

Analysis 1.1. Comparison 1 Chinese herbal medicines versus placebo, Outcome 1 New fractures.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 1 Chinese herbal medicines versus placebo

Outcome: 1 New fractures

Study or subgroup	Herbal drugs n/N	Placebo n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 Kanggusong capsule versus placebo (12 months)					
Zhao HX 2001	0/50	10/54		100.0 %	0.05 [0.00, 0.85]
Total (95% CI)	**50**	**54**		**100.0 %**	**0.05 [0.00, 0.85]**
Total events: 0 (Herbal drugs), 10 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.07 (P = 0.038)					
Test for subgroup differences: Not applicable					

Analysis 1.2. Comparison 1 Chinese herbal medicines versus placebo, Outcome 2 Bone mineral density (BMD).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 1 Chinese herbal medicines versus placebo

Outcome: 2 Bone mineral density (BMD)

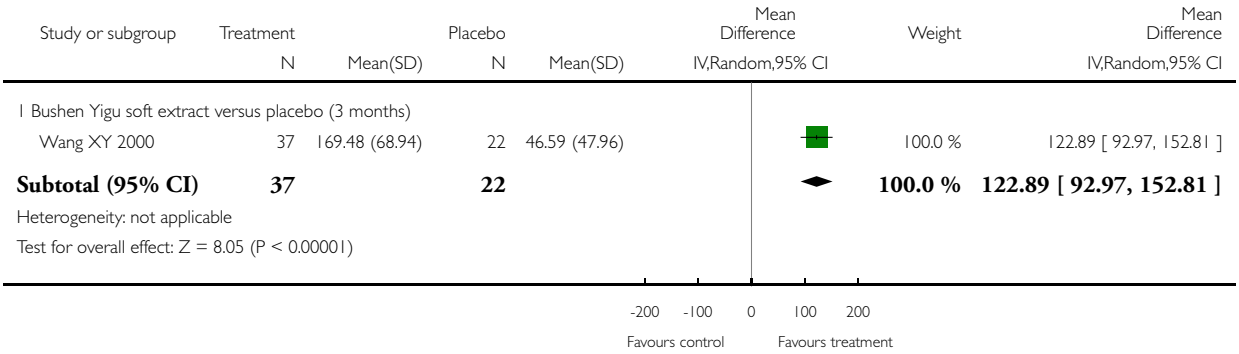
Study or subgroup	Herbal drugs N	Mean(SD)	Placebo N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 Migu decoction versus placebo (BMD of lumbar spine, 4 months)							
Lin W 2000	13	0.9 (0.12)	7	0.74 (0.1)		100.0 %	0.16 [0.06, 0.26]
Subtotal (95% CI)	**13**		**7**			**100.0 %**	**0.16 [0.06, 0.26]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.18 (P = 0.0015)							
2 Kanggusong capsule versus placebo (BMD of lumbar spine, 12 months)							
Zhao HX 2001	70	0.88 (0.11)	70	0.82 (0.12)		100.0 %	0.06 [0.02, 0.10]
Subtotal (95% CI)	**70**		**70**			**100.0 %**	**0.06 [0.02, 0.10]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.08 (P = 0.0020)							
3 Bushen Yigu soft extract versus placebo (BMD of radius, 3 months)							
Wang XY 2000	37	0.64 (0.07)	22	0.58 (0.04)		100.0 %	0.06 [0.03, 0.09]
Subtotal (95% CI)	**37**		**22**			**100.0 %**	**0.06 [0.03, 0.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 4.19 (P = 0.000028)							
4 Bushen Yigu soft extract versus placebo (BMD of ulna, 3 months)							
Wang XY 2000	37	0.65 (0.07)	22	0.59 (0.07)		100.0 %	0.06 [0.02, 0.10]
Subtotal (95% CI)	**37**		**22**			**100.0 %**	**0.06 [0.02, 0.10]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.18 (P = 0.0015)							

Analysis 1.3. Comparison 1 Chinese herbal medicines versus placebo, Outcome 3 Oestradiol (E2).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 1 Chinese herbal medicines versus placebo

Outcome: 3 Oestradiol (E2)

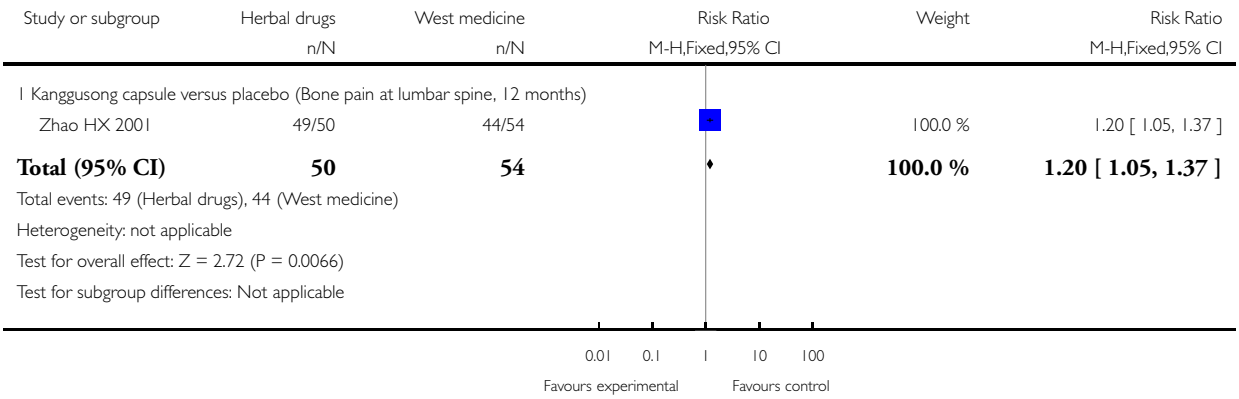


Analysis 1.4. Comparison 1 Chinese herbal medicines versus placebo, Outcome 4 Symptoms including pain, muscle fatigue and limited mobility.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 1 Chinese herbal medicines versus placebo

Outcome: 4 Symptoms including pain, muscle fatigue and limited mobility

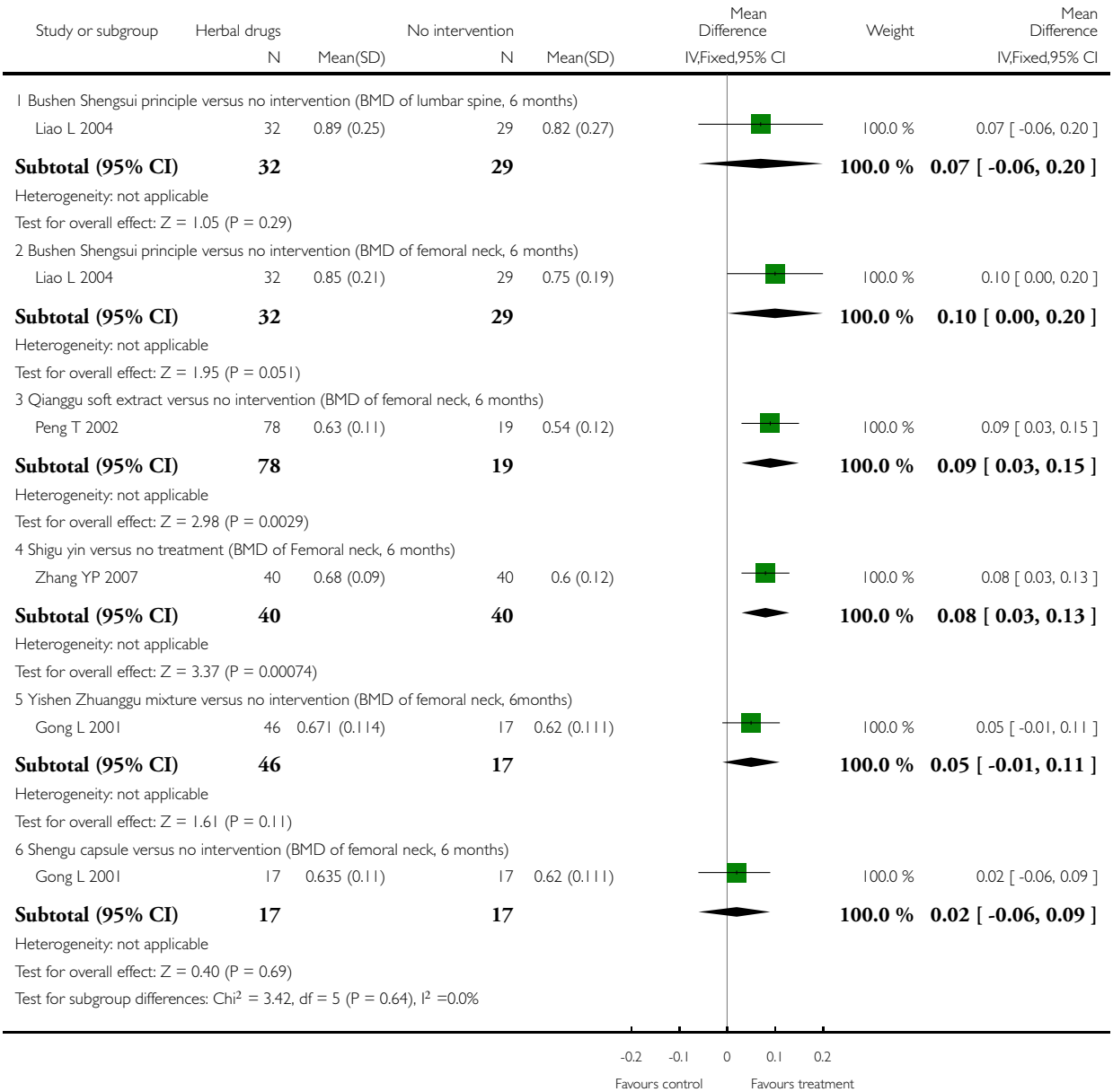


Analysis 2.1. Comparison 2 Chinese herbal medicines versus no intervention, Outcome 1 Bone mineral density (BMD).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 2 Chinese herbal medicines versus no intervention

Outcome: 1 Bone mineral density (BMD)

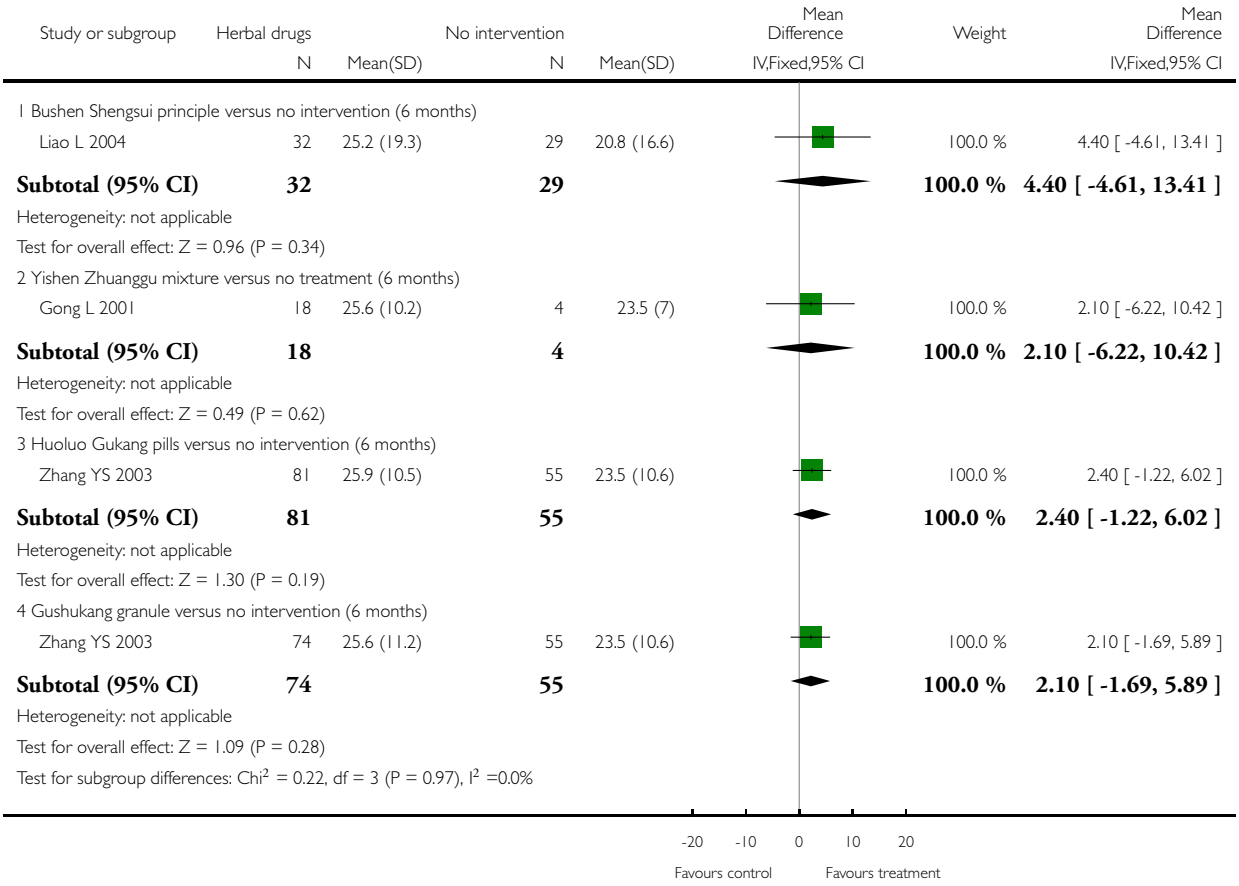


Analysis 2.2. Comparison 2 Chinese herbal medicines versus no intervention, Outcome 2 Oestradiol (E2).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 2 Chinese herbal medicines versus no intervention

Outcome: 2 Oestradiol (E2)

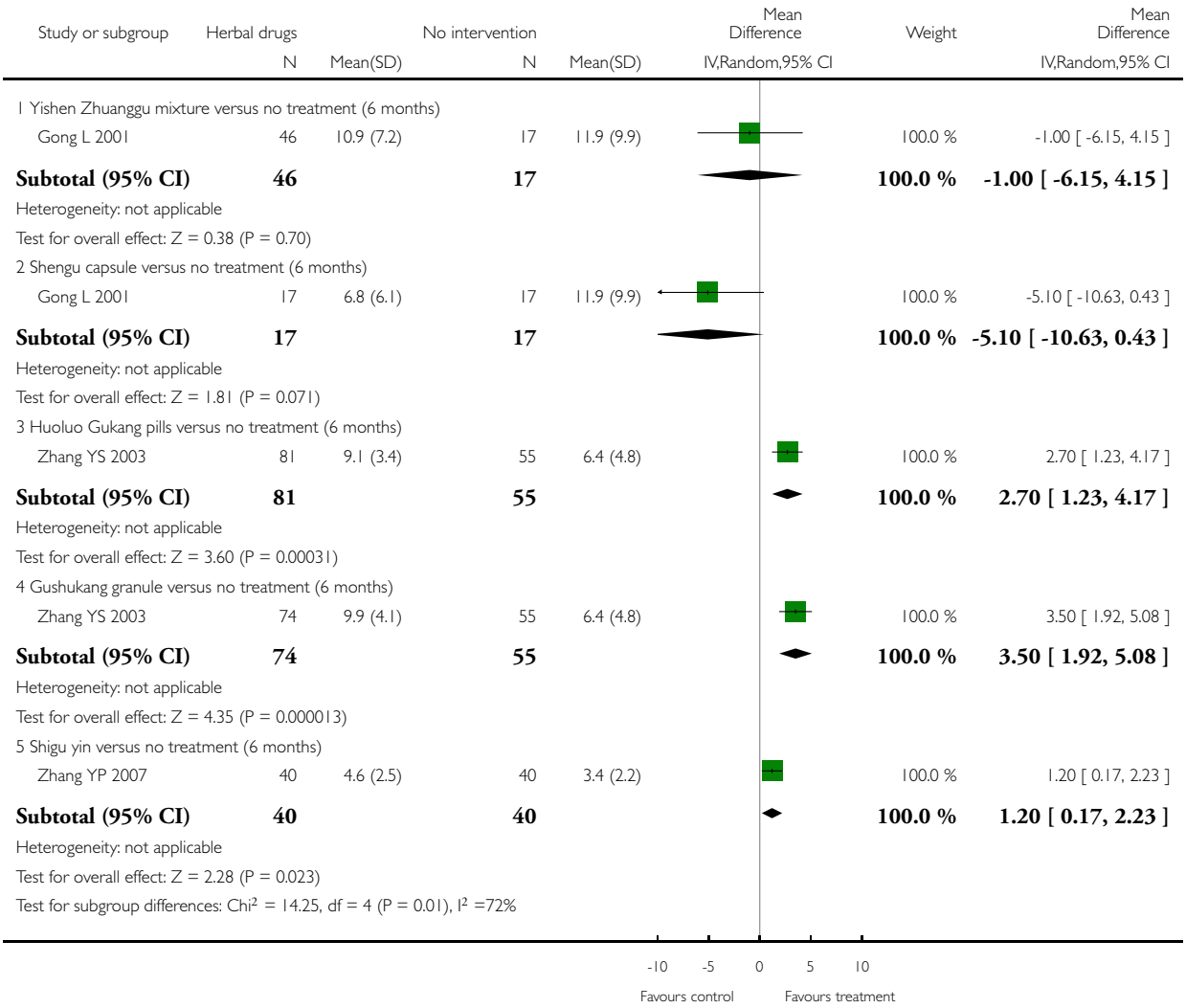


Analysis 2.3. Comparison 2 Chinese herbal medicines versus no intervention, Outcome 3 Bone Gla protein (BGP).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 2 Chinese herbal medicines versus no intervention

Outcome: 3 Bone Gla protein (BGP)



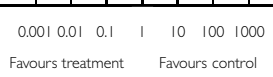
Analysis 3.1. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 1 New fractures.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 1 New fractures

Study or subgroup	Herbal drugs n/N	West medicine n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 Kanggusong granule versus Caltrate (9 months)					
An SJ 2000	0/31	0/40			Not estimable
Subtotal (95% CI)	**31**	**40**			**Not estimable**
Total events: 0 (Herbal drugs), 0 (West medicine)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
2 Kanggusong granule versus ipriflavone plus Caltrate (9 months)					
An SJ 2000	0/31	0/40			Not estimable
Subtotal (95% CI)	**31**	**40**			**Not estimable**
Total events: 0 (Herbal drugs), 0 (West medicine)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Total (95% CI)	**62**	**80**			**Not estimable**
Total events: 0 (Herbal drugs), 0 (West medicine)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 0.0, df = -1 (P = 0.0), I^2 =0.0%					



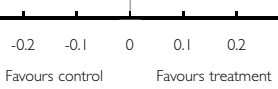
Analysis 3.2. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 2 Bone mineral density (BMD).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 2 Bone mineral density (BMD)

Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Kanggusong granule versus ipriflavone plus Caltrate (BMD of lumbar spine, 9 months)							
An SJ 2000	31	0.95 (0.11)	40	0.95 (0.12)		100.0 %	0.0 [-0.05, 0.05]
Subtotal (95% CI)	**31**		**40**			**100.0 %**	**0.0 [-0.05, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.0 (P = 1.0)							
2 Kanggusong granule versus Caltrate (BMD of lumbar spine, 9 months)							
An SJ 2000	31	0.95 (0.11)	40	0.91 (0.13)		100.0 %	0.04 [-0.02, 0.10]
Subtotal (95% CI)	**31**		**40**			**100.0 %**	**0.04 [-0.02, 0.10]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.40 (P = 0.16)							
3 Kanggusong capsule versus Caltrate (BMD of lumbar spine, 6 months)							
Wei RY 2011	48	0.745 (0.102)	32	0.68 (0.106)		100.0 %	0.06 [0.02, 0.11]
Subtotal (95% CI)	**48**		**32**			**100.0 %**	**0.06 [0.02, 0.11]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.64 (P = 0.0082)							
4 Strong Bone capsule versus Caltrate (BMD of lumbar spine, 3 months)							
Cui TH 1999	74	0.81 (0.18)	31	0.82 (0.15)		100.0 %	-0.01 [-0.08, 0.06]
Subtotal (95% CI)	**74**		**31**			**100.0 %**	**-0.01 [-0.08, 0.06]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.29 (P = 0.77)							
5 Qianggu capsule versus active vitamin D3 (BMD of lumbar spine, 6 months)							
Wang J 2007	28	0.8 (0.11)	26	0.76 (0.08)		100.0 %	0.04 [-0.01, 0.09]
Subtotal (95% CI)	**28**		**26**			**100.0 %**	**0.04 [-0.01, 0.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.54 (P = 0.12)							
6 Qianggu capsule versus alendronate (BMD of lumbar spine, 6 months)							
Xu H 2010	40	0.742 (0.095)	40	0.74 (0.103)		100.0 %	0.01 [-0.04, 0.05]
Subtotal (95% CI)	**40**		**40**			**100.0 %**	**0.01 [-0.04, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.27 (P = 0.79)							
7 Herba epimedii prescription versus vitamin D plus Caltrate (BMD of lumbar spine, 6 months)							
Dong YF 2004	40	0.76 (0.09)	40	0.73 (0.06)		100.0 %	0.03 [0.00, 0.06]



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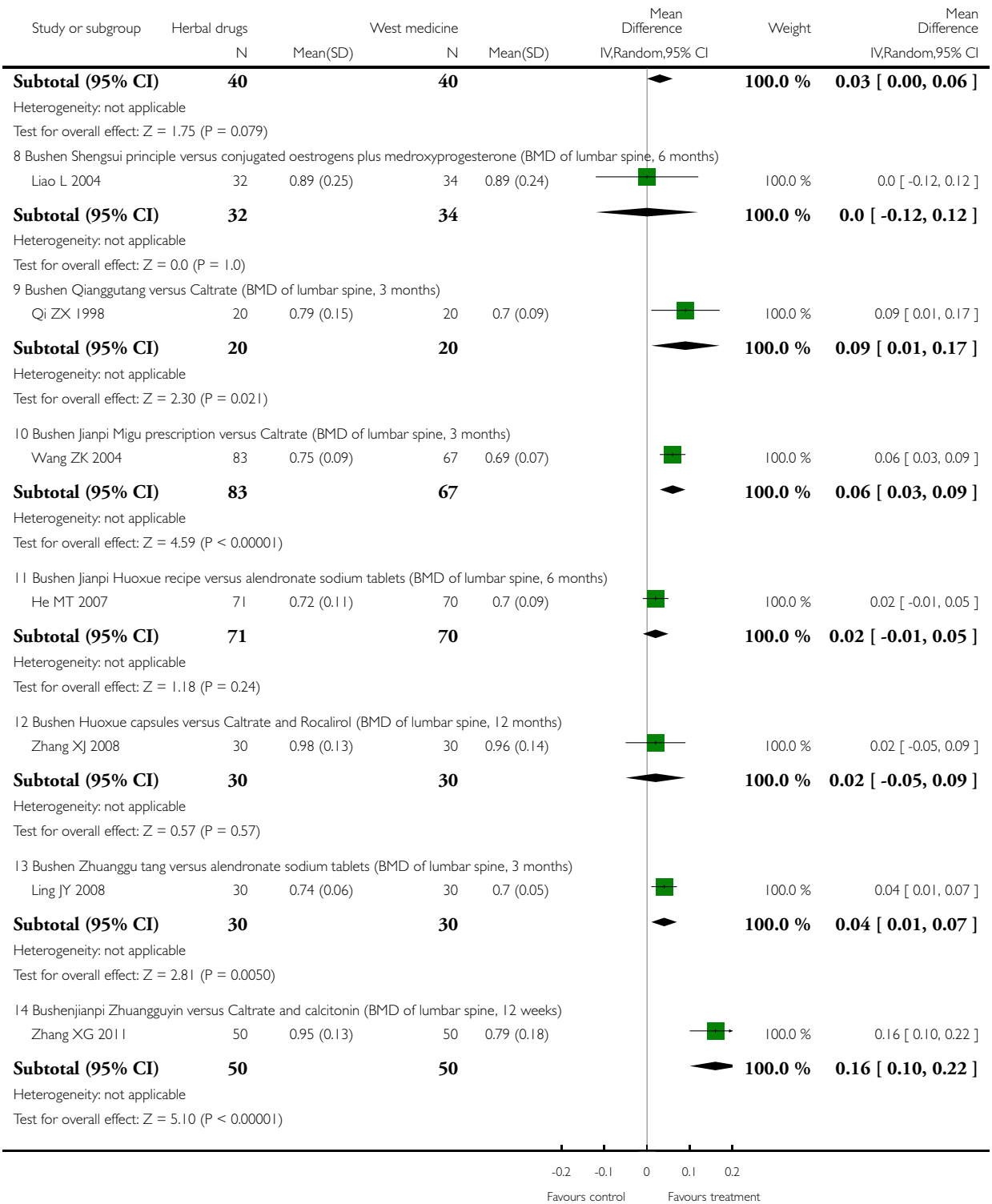

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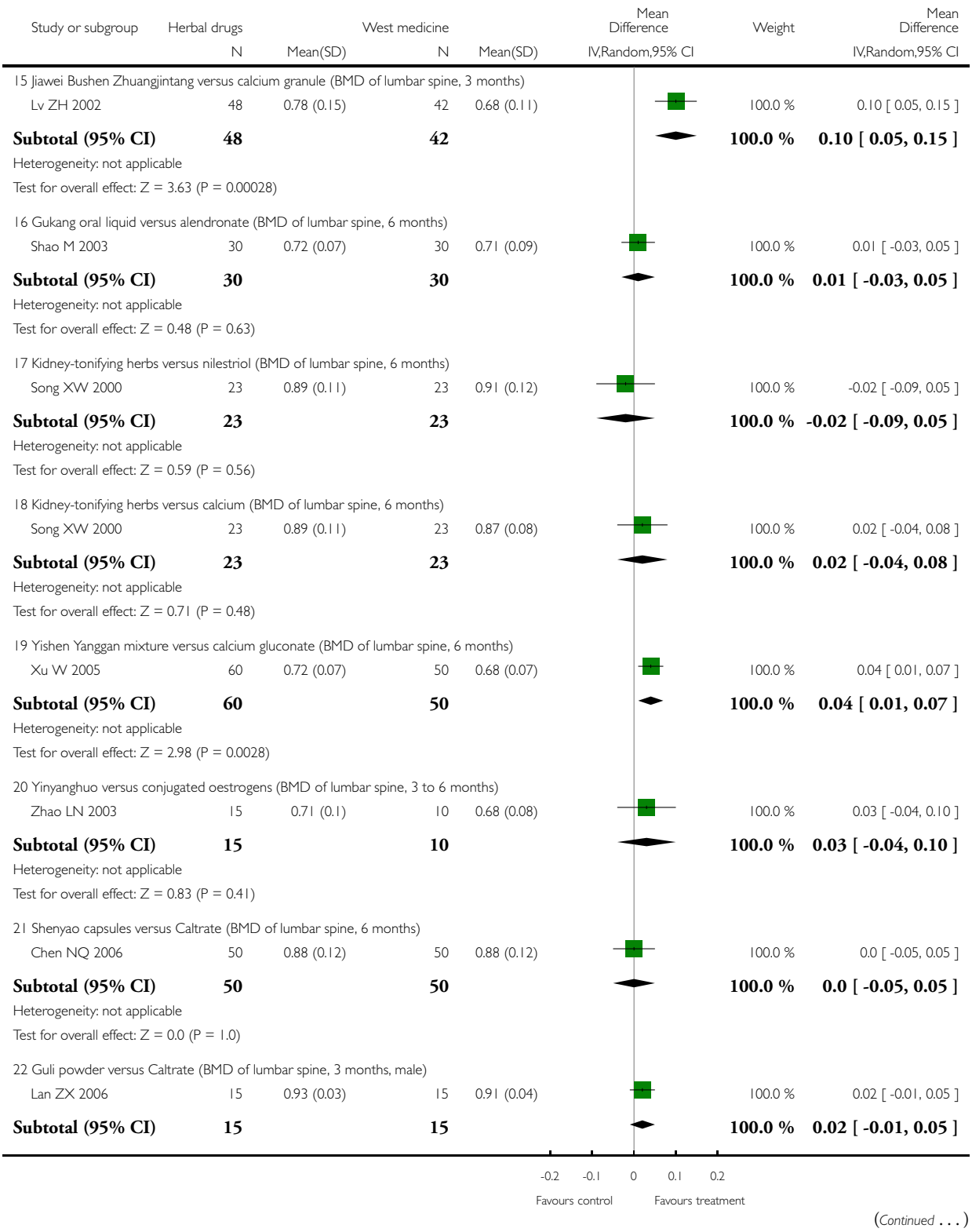

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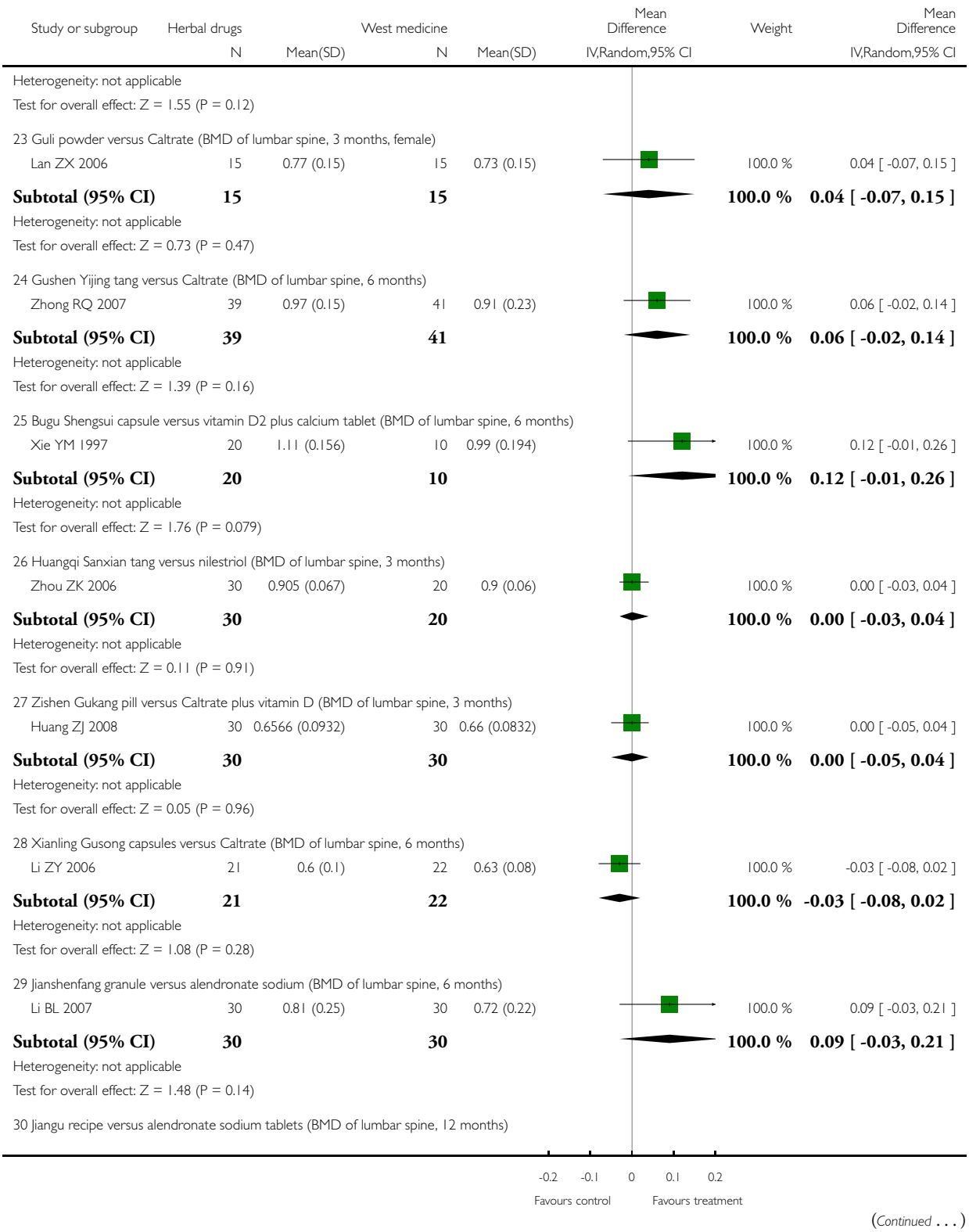

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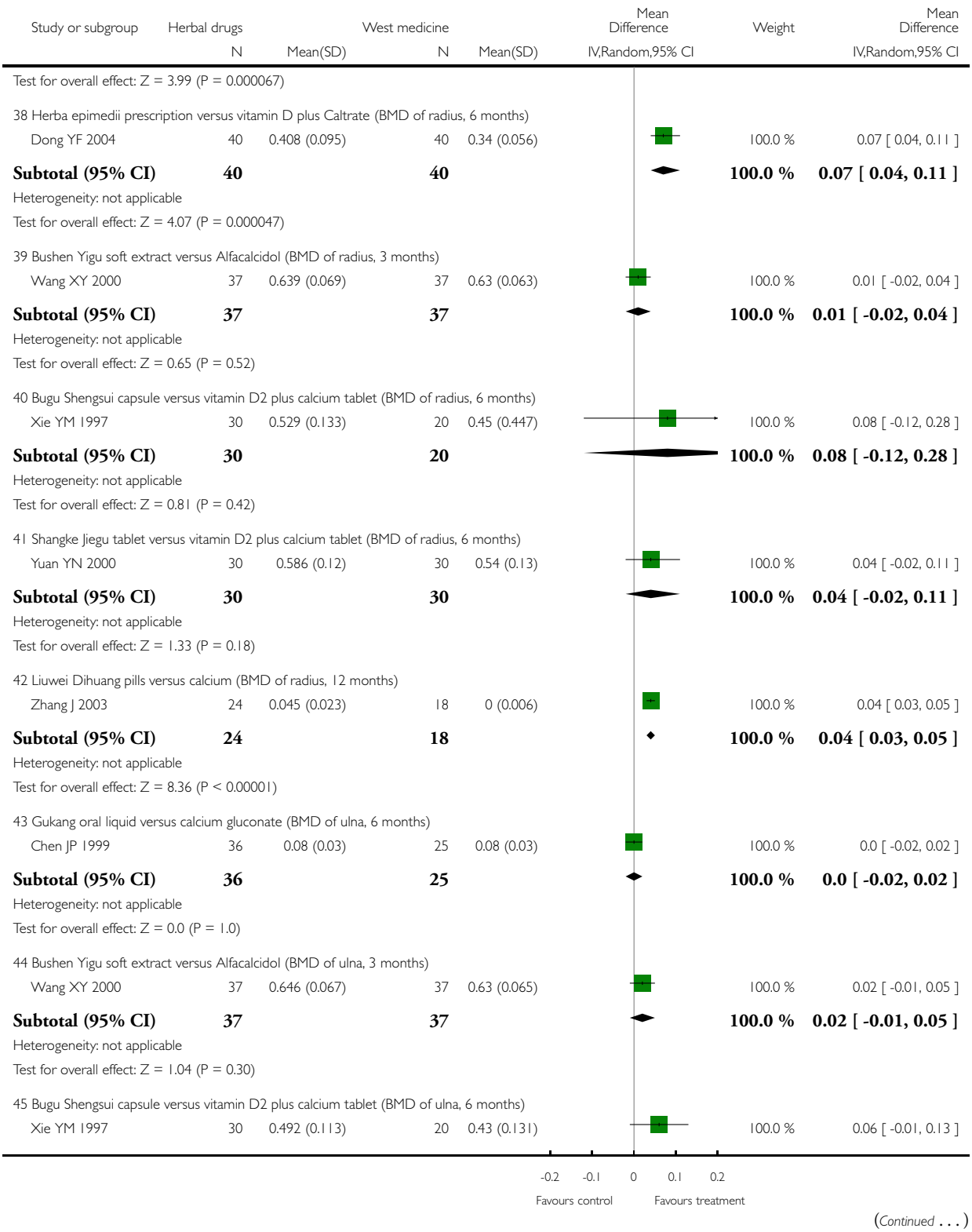

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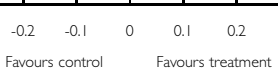
Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
53 Kidney-tonifying herbs versus calcium (BMD of femoral neck, 6 months)							
Song XW 2000	23	0.69 (0.07)	23	0.64 (0.05)		100.0 %	0.05 [0.01, 0.09]
Subtotal (95% CI)	**23**		**23**			**100.0 %**	**0.05 [0.01, 0.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.79 (P = 0.0053)							
54 Gumikang capsule versus calcium gluconate (BMD of femoral neck, 6 months)							
Wang CC 2005	32	0.58 (0.1)	28	0.56 (0.12)		100.0 %	0.02 [-0.04, 0.08]
Subtotal (95% CI)	**32**		**28**			**100.0 %**	**0.02 [-0.04, 0.08]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.70 (P = 0.49)							
55 Yanghuo Sanzi tang versus Caltrate (BMD of femoral neck, 6 months)							
Qiu RB 2004	30	0.68 (0.06)	30	0.63 (0.06)		100.0 %	0.05 [0.02, 0.08]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.05 [0.02, 0.08]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.23 (P = 0.0012)							
56 Qianggu soft extract versus calcium gluconate (BMD of femoral neck, 6 months)							
Peng T 2002	78	0.63 (0.11)	21	0.56 (0.11)		100.0 %	0.07 [0.02, 0.12]
Subtotal (95% CI)	**78**		**21**			**100.0 %**	**0.07 [0.02, 0.12]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.59 (P = 0.0096)							
57 Qianggu capsules versus oestradiol valerate (BMD of femoral neck, 6 months)							
Ruan XY 2006	48	0.72 (0.1)	42	0.7 (0.08)		100.0 %	0.02 [-0.02, 0.06]
Subtotal (95% CI)	**48**		**42**			**100.0 %**	**0.02 [-0.02, 0.06]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.05 (P = 0.29)							
58 Qianggu paste versus calcium gluconate tablets (BMD of femoral neck, 6 months)							
Wang H 2007	75	0.63 (0.11)	48	0.56 (0.11)		100.0 %	0.07 [0.03, 0.11]
Subtotal (95% CI)	**75**		**48**			**100.0 %**	**0.07 [0.03, 0.11]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.44 (P = 0.00058)							
59 Qianggu capsule versus active vitamin D3 (BMD of femoral neck, 6 months)							
Wang J 2007	28	0.69 (0.09)	26	0.66 (0.07)		100.0 %	0.03 [-0.01, 0.07]
Subtotal (95% CI)	**28**		**26**			**100.0 %**	**0.03 [-0.01, 0.07]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.37 (P = 0.17)							
60 Shigu yin versus Caltrate (BMD of femoral neck, 6 months)							
Zhang YP 2007	40	0.68 (0.09)	40	0.65 (0.11)		100.0 %	0.03 [-0.01, 0.07]
Subtotal (95% CI)	**40**		**40**			**100.0 %**	**0.03 [-0.01, 0.07]**



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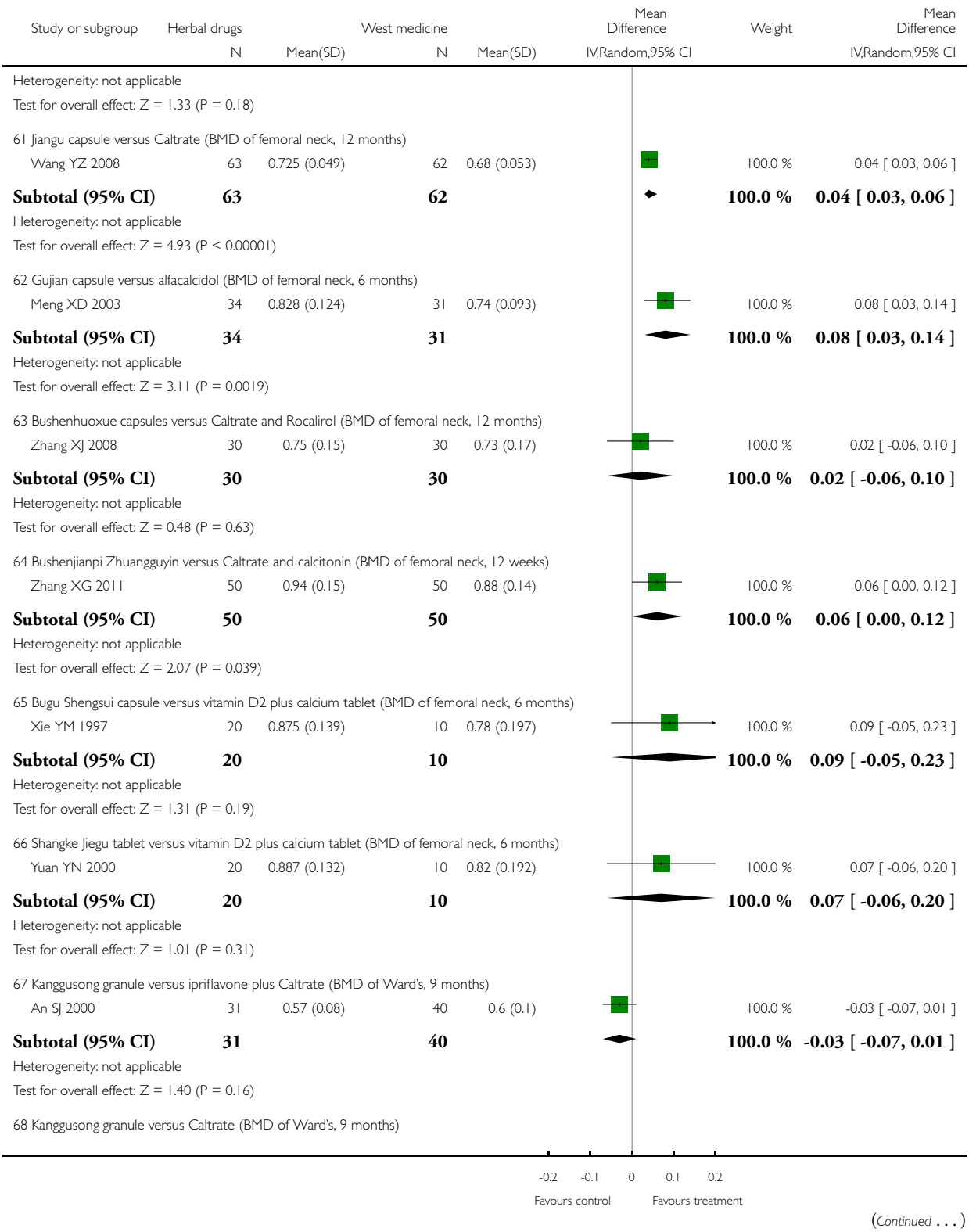

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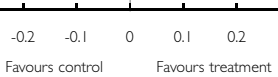
Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
An SJ 2000	31	0.57 (0.08)	40	0.57 (0.1)		100.0 %	0.0 [-0.04, 0.04]
Subtotal (95% CI)	**31**		**40**			**100.0 %**	**0.0 [-0.04, 0.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.0 (P = 1.0)							
69 Kidney-tonifying herbs versus nilestriol (BMD of Ward's, 6 months)							
Song XW 2000	23	0.57 (0.07)	23	0.51 (0.07)		100.0 %	0.06 [0.02, 0.10]
Subtotal (95% CI)	**23**		**23**			**100.0 %**	**0.06 [0.02, 0.10]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.91 (P = 0.0037)							
70 Kidney-tonifying herbs versus calcium (BMD of Ward's, 6 months)							
Song XW 2000	23	0.57 (0.07)	23	0.47 (0.05)		100.0 %	0.10 [0.06, 0.14]
Subtotal (95% CI)	**23**		**23**			**100.0 %**	**0.10 [0.06, 0.14]**
Heterogeneity: not applicable							
Test for overall effect: Z = 5.58 (P < 0.00001)							
71 Gujian capsule versus alfacalcidol (BMD of Ward's, 6 months)							
Meng XD 2003	34	0.661 (0.159)	31	0.58 (0.134)		100.0 %	0.08 [0.01, 0.15]
Subtotal (95% CI)	**34**		**31**			**100.0 %**	**0.08 [0.01, 0.15]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.20 (P = 0.028)							
72 Qianggu capsule versus alendronate (BMD of Ward's, 6 months)							
Xu H 2010	40	0.445 (0.051)	40	0.44 (0.062)		100.0 %	0.01 [-0.02, 0.03]
Subtotal (95% CI)	**40**		**40**			**100.0 %**	**0.01 [-0.02, 0.03]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.63 (P = 0.53)							
73 Xianlinggubao capsule versus alendronate (BMD of Ward's, 6 months)							
Xu M 2009	52	0.44 (0.053)	52	0.44 (0.054)		100.0 %	0.00 [-0.02, 0.02]
Subtotal (95% CI)	**52**		**52**			**100.0 %**	**0.00 [-0.02, 0.02]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.10 (P = 0.92)							
74 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (BMD of Ward's, 6 months)							
Xie YM 1997	20	0.71 (0.126)	10	0.64 (0.169)		100.0 %	0.07 [-0.05, 0.19]
Subtotal (95% CI)	**20**		**10**			**100.0 %**	**0.07 [-0.05, 0.19]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.11 (P = 0.27)							
75 Shangke Jiegu tablet versus vitamin D2 plus calcium tablet (BMD of Ward's, 6 months)							
Yuan YN 2000	20	0.736 (0.132)	10	0.63 (0.162)		100.0 %	0.10 [-0.01, 0.22]
Subtotal (95% CI)	**20**		**10**			**100.0 %**	**0.10 [-0.01, 0.22]**
Heterogeneity: not applicable							



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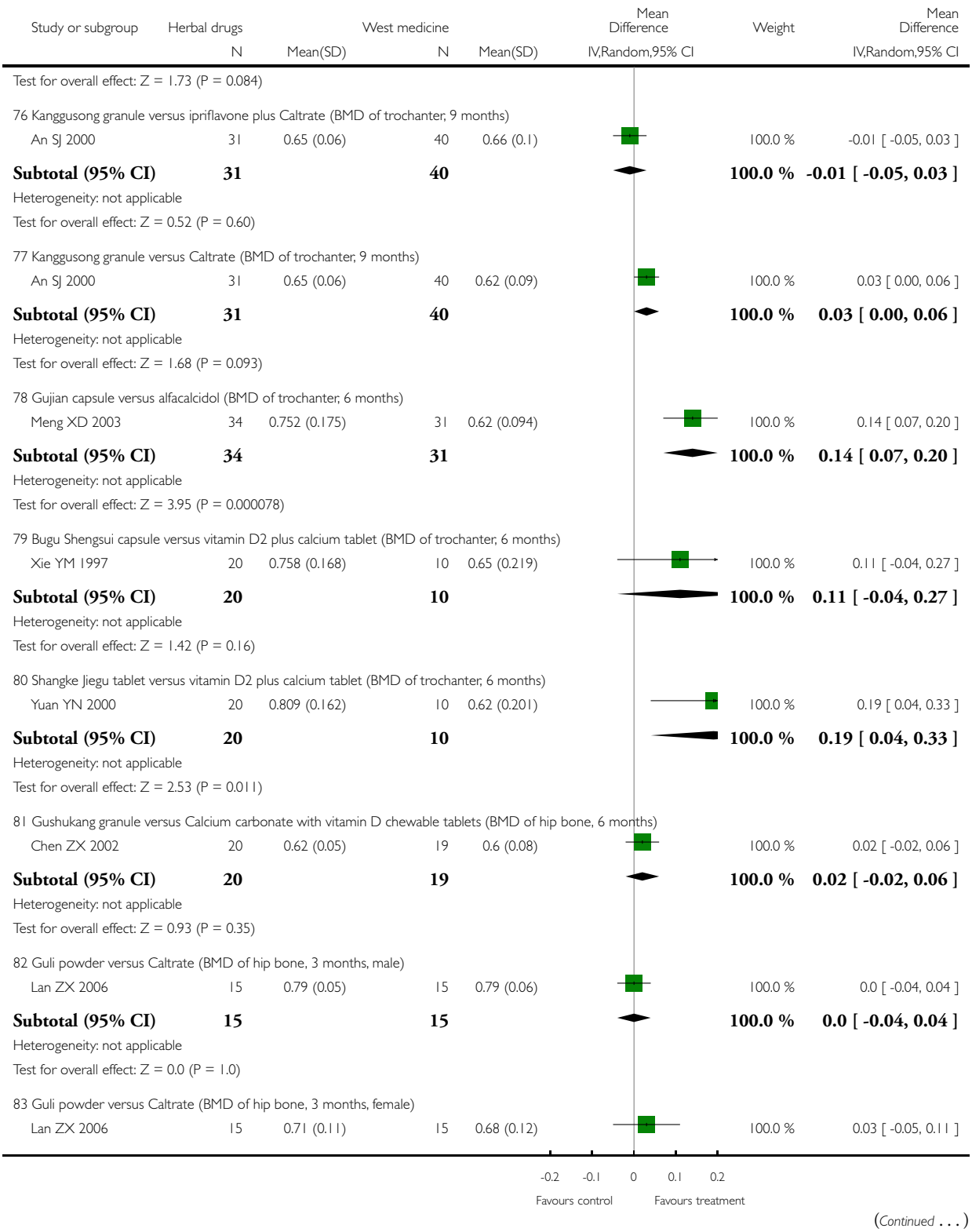

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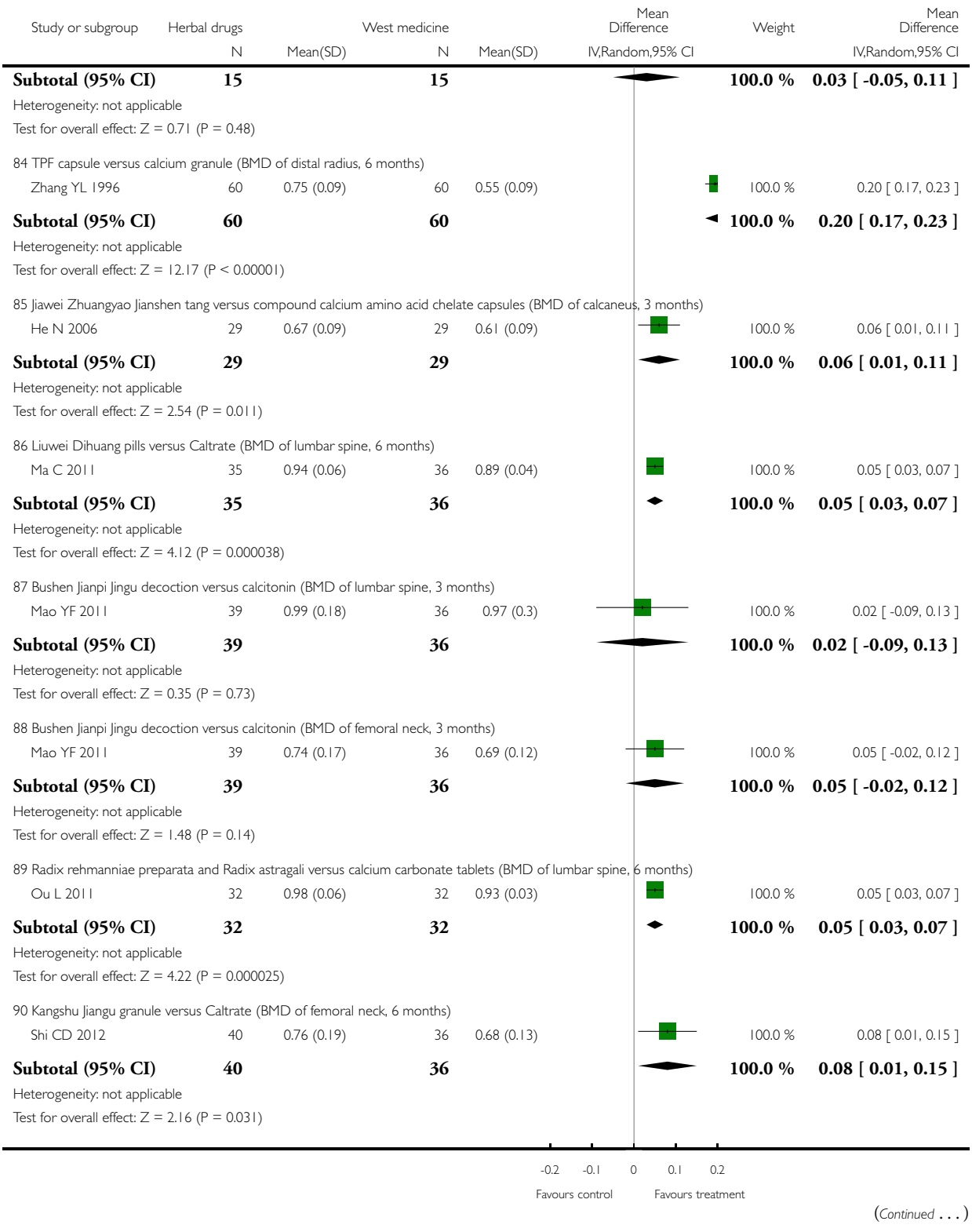

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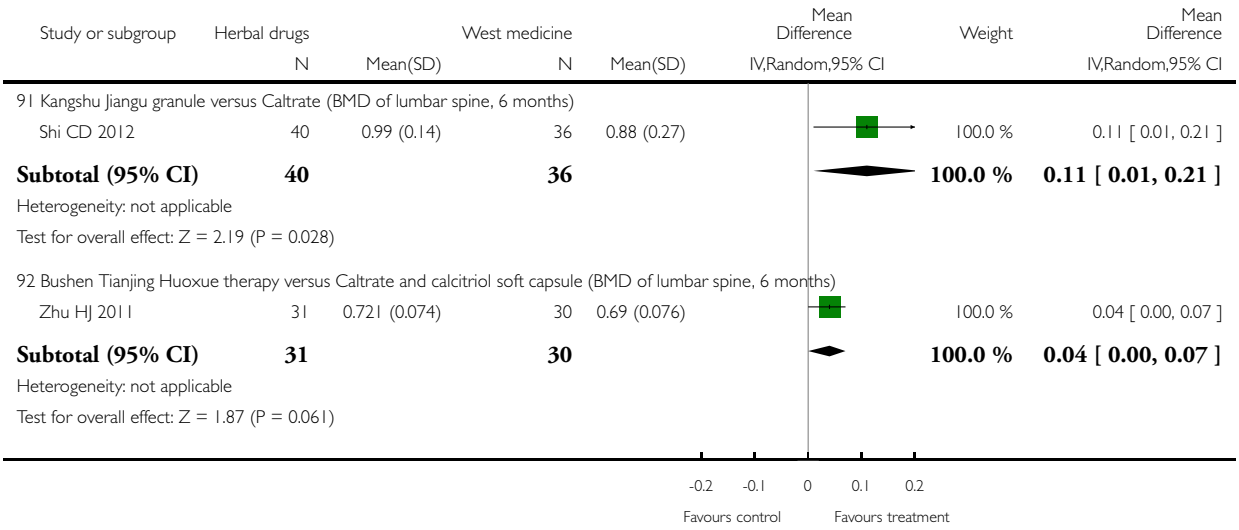


Analysis 3.3. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 3 T score in BMD measurement.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 3 T score in BMD measurement

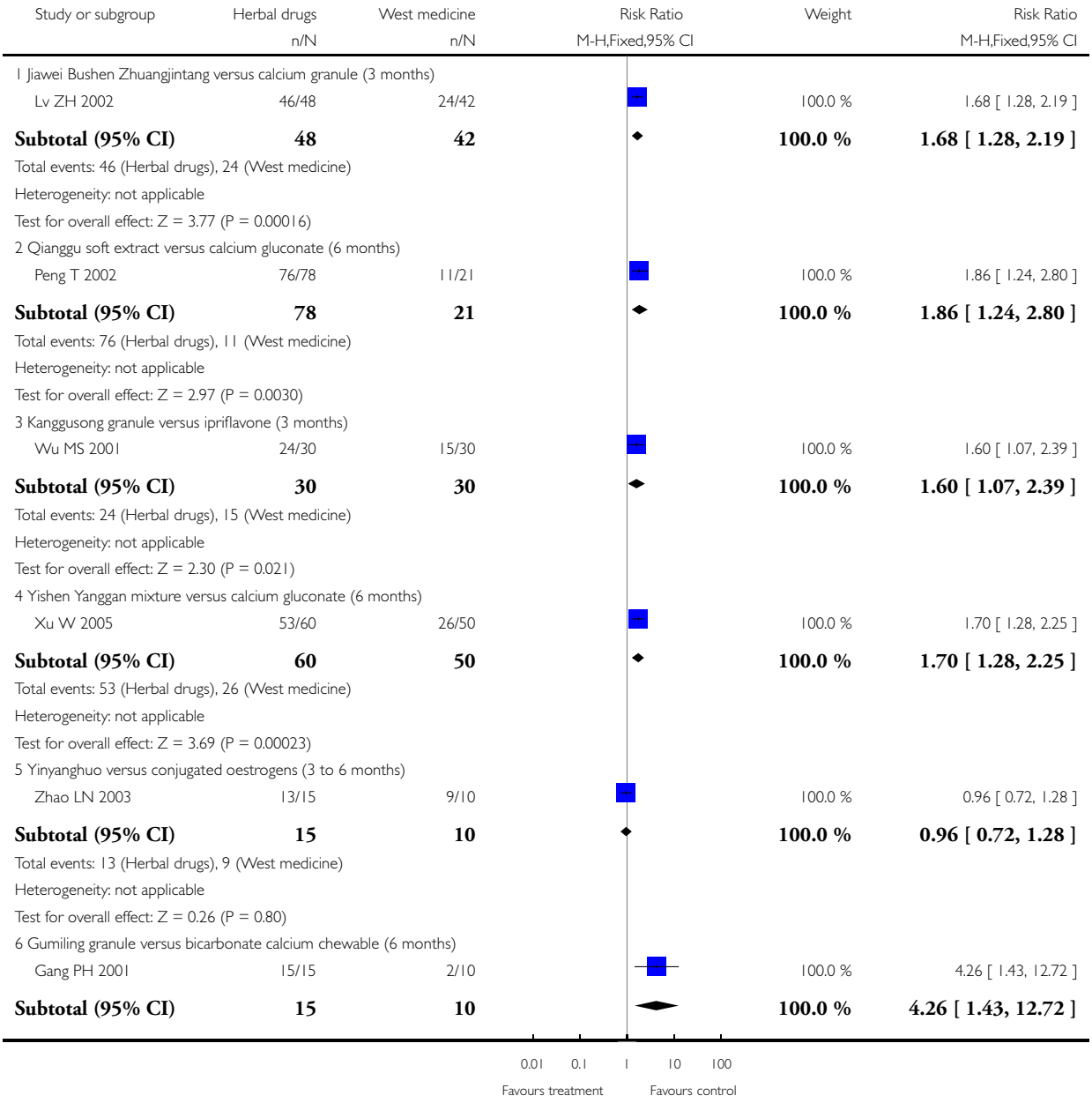
Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Jingujian granule versus Caltrate (T score, 3 months)							
Li YH 2008	80	-3.09 (1.77)	40	-3.14 (1.55)		36.4 %	0.03 [-0.35, 0.41]
Subtotal (95% CI)	**80**		**40**			**36.4 %**	**0.03 [-0.35, 0.41]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.15 (P = 0.88)							
2 Jingujian granule versus Caltrate (T score, 3 months)							
Li YH 2010	140	-3.07 (0.12)	70	-3.1 (0.27)		63.6 %	0.16 [-0.12, 0.45]
Subtotal (95% CI)	**140**		**70**			**63.6 %**	**0.16 [-0.12, 0.45]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.11 (P = 0.27)							
Total (95% CI)	**220**		**110**			**100.0 %**	**0.11 [-0.12, 0.34]**
Heterogeneity: Tau^2 = 0.0; Chi^2 = 0.30, df = 1 (P = 0.58); I^2 =0.0%							
Test for overall effect: Z = 0.98 (P = 0.33)							
Test for subgroup differences: Chi^2 = 0.30, df = 1 (P = 0.58), I^2 =0.0%							

Analysis 3.4. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 4 Symptoms including pain, muscle fatigue and limited mobility.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 4 Symptoms including pain, muscle fatigue and limited mobility



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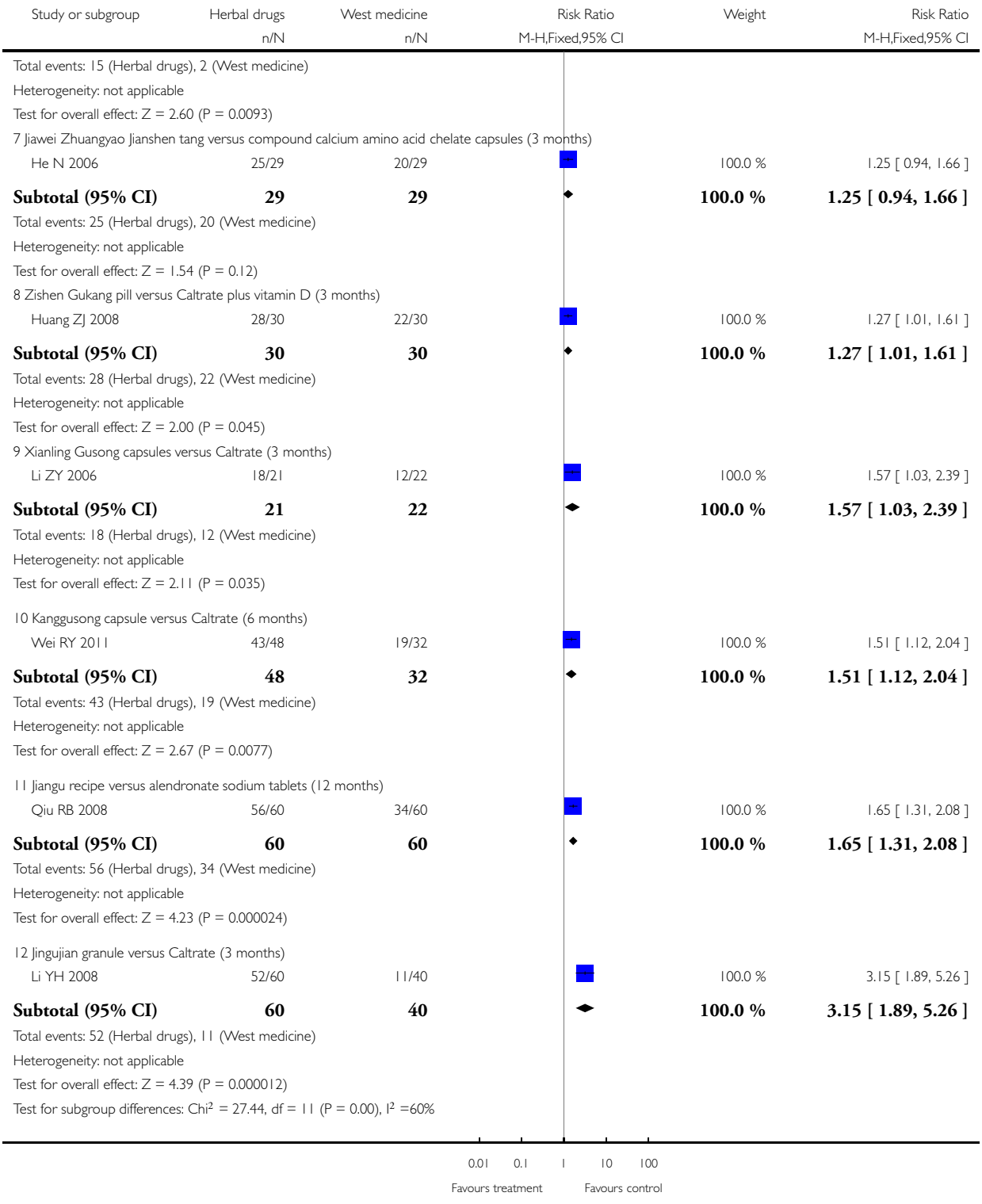
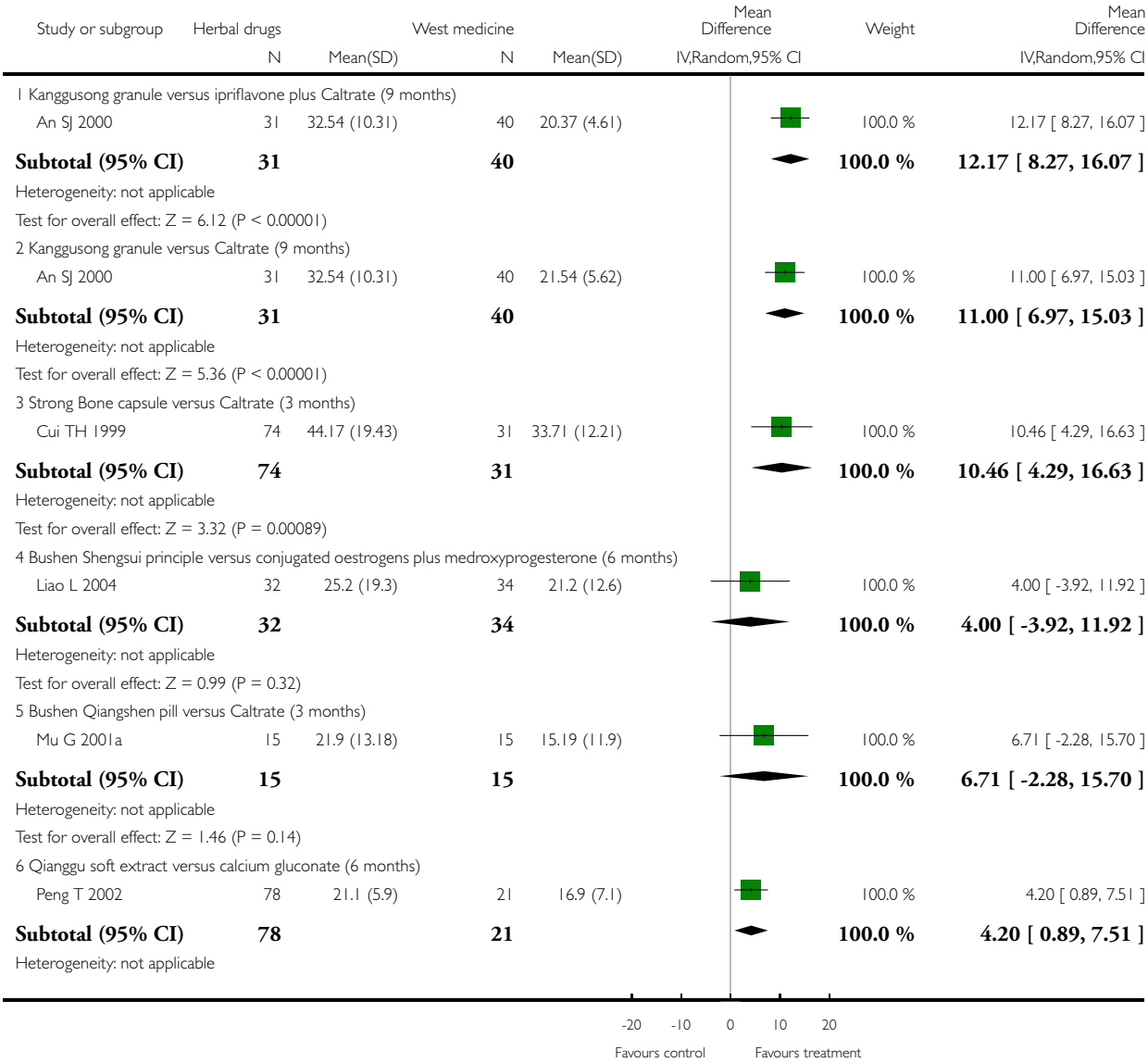


Analysis 3.5. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 5 Oestradiol (E2).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 5 Oestradiol (E2)



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Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Test for overall effect: Z = 2.49 (P = 0.013)							
7 Gukang oral liquid versus alendronate (6 months)							
Shao M 2003	30	64.02 (19.87)	30	60.12 (21.76)		100.0 %	3.90 [-6.64, 14.44]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**3.90 [-6.64, 14.44]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.72 (P = 0.47)							
8 Gumikang capsule versus calcium gluconate (6 months)							
Wang CC 2005	32	20.7 (3.8)	28	17.2 (5.3)		100.0 %	3.50 [1.14, 5.86]
Subtotal (95% CI)	**32**		**28**			**100.0 %**	**3.50 [1.14, 5.86]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.90 (P = 0.0037)							
9 Bushen Yigu soft extract versus Alfacalcidol (3 months)							
Wang XY 2000	37	169.48 (68.94)	37	93.19 (121.8)		100.0 %	76.29 [31.19, 121.39]
Subtotal (95% CI)	**37**		**37**			**100.0 %**	**76.29 [31.19, 121.39]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.32 (P = 0.00091)							
10 Kanggusong granule versus ipriflavone (3 months)							
Wu MS 2001	30	158.39 (40.31)	30	154.21 (30.23)		100.0 %	4.18 [-13.85, 22.21]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**4.18 [-13.85, 22.21]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.45 (P = 0.65)							
11 Yanghuo Sanzi tang versus Caltrate (6 months)							
Qiu RB 2004	30	48.9 (11.48)	30	25.83 (9.07)		100.0 %	23.07 [17.83, 28.31]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**23.07 [17.83, 28.31]**
Heterogeneity: not applicable							
Test for overall effect: Z = 8.64 (P < 0.00001)							
12 Gusong recipe versus alendronate sodium tablets (5 months)							
Xiao W 2008	20	64.02 (19.87)	20	60.12 (21.76)		100.0 %	3.90 [-9.01, 16.81]
Subtotal (95% CI)	**20**		**20**			**100.0 %**	**3.90 [-9.01, 16.81]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.59 (P = 0.55)							
13 Gushukang granule versus ipriflavone (6 months)							
Wu MS 2007	30	152.33 (19.11)	30	138.35 (20.69)		100.0 %	13.98 [3.90, 24.06]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**13.98 [3.90, 24.06]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.72 (P = 0.0066)							
14 Bushen Jianpi Huoxue recipe versus alendronate sodium tablets (6 months)							
He MT 2007	71	41.56 (8.16)	70	38.41 (9.17)		100.0 %	3.15 [0.28, 6.02]

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Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Subtotal (95% CI)	**71**		**70**			**100.0 %**	**3.15 [0.28, 6.02]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.15 (P = 0.031)							
15 Prescription for tonifying kidney versus ipriflavone (6 months)							
Wu MS 2007	30	152.35 (20.11)	30	138.35 (20.69)		100.0 %	14.00 [3.68, 24.32]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**14.00 [3.68, 24.32]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.66 (P = 0.0079)							
16 Kidney meridian sticking versus ipriflavone (6 months)							
Wu MS 2007	30	150.34 (22.13)	30	138.35 (20.69)		100.0 %	11.99 [1.15, 22.83]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**11.99 [1.15, 22.83]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.17 (P = 0.030)							
17 Urinary bladder meridian sticking versus ipriflavone (6 months)							
Wu MS 2007	30	156.34 (20.19)	30	138.35 (20.69)		100.0 %	17.99 [7.65, 28.33]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**17.99 [7.65, 28.33]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.41 (P = 0.00065)							
18 Huangqi Sanxian tang versus nilestriol (3 months)							
Zhou ZK 2006	30	19.72 (2.02)	20	52.69 (14.63)		100.0 %	-32.97 [-39.42, -26.52]
Subtotal (95% CI)	**30**		**20**			**100.0 %**	**-32.97 [-39.42, -26.52]**
Heterogeneity: not applicable							
Test for overall effect: Z = 10.01 (P < 0.00001)							
19 Gukang oral liquid versus alendronate sodium tablets (6 months)							
Wang JM 2008	33	44.25 (5.46)	37	39.16 (4.07)		100.0 %	5.09 [2.81, 7.37]
Subtotal (95% CI)	**33**		**37**			**100.0 %**	**5.09 [2.81, 7.37]**
Heterogeneity: not applicable							
Test for overall effect: Z = 4.38 (P = 0.000012)							
20 Gukang decoction versus alendronate sodium tablets (4 months)							
Chen X 2008	42	39.56 (18.64)	41	40.21 (20.32)		100.0 %	-0.65 [-9.04, 7.74]
Subtotal (95% CI)	**42**		**41**			**100.0 %**	**-0.65 [-9.04, 7.74]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.15 (P = 0.88)							
21 Jianshenfang granule versus alendronate sodium (6 months)							
Li BL 2007	30	17.31 (3.26)	30	11.48 (3.16)		100.0 %	5.83 [4.21, 7.45]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**5.83 [4.21, 7.45]**
Heterogeneity: not applicable							
Test for overall effect: Z = 7.03 (P < 0.00001)							

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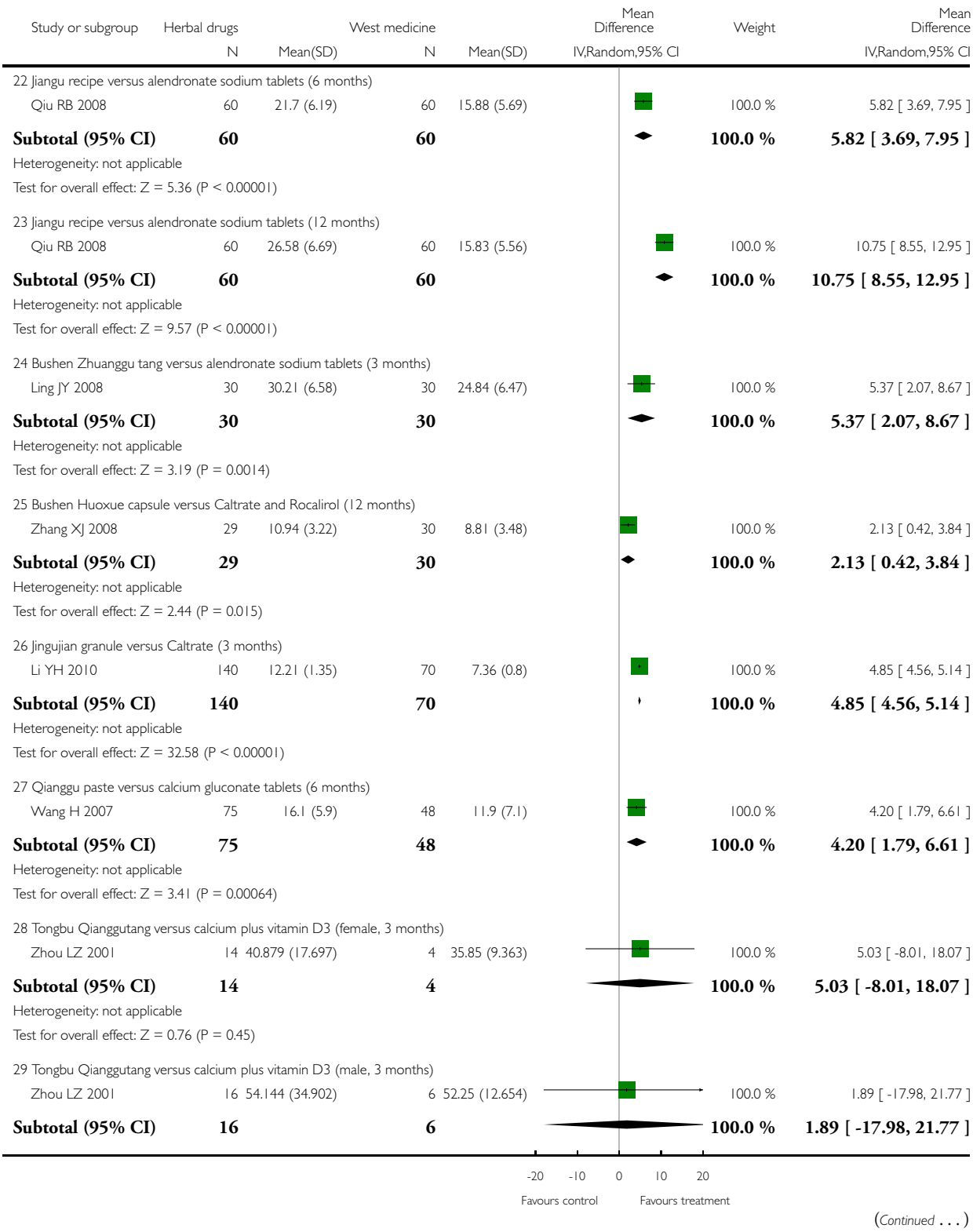

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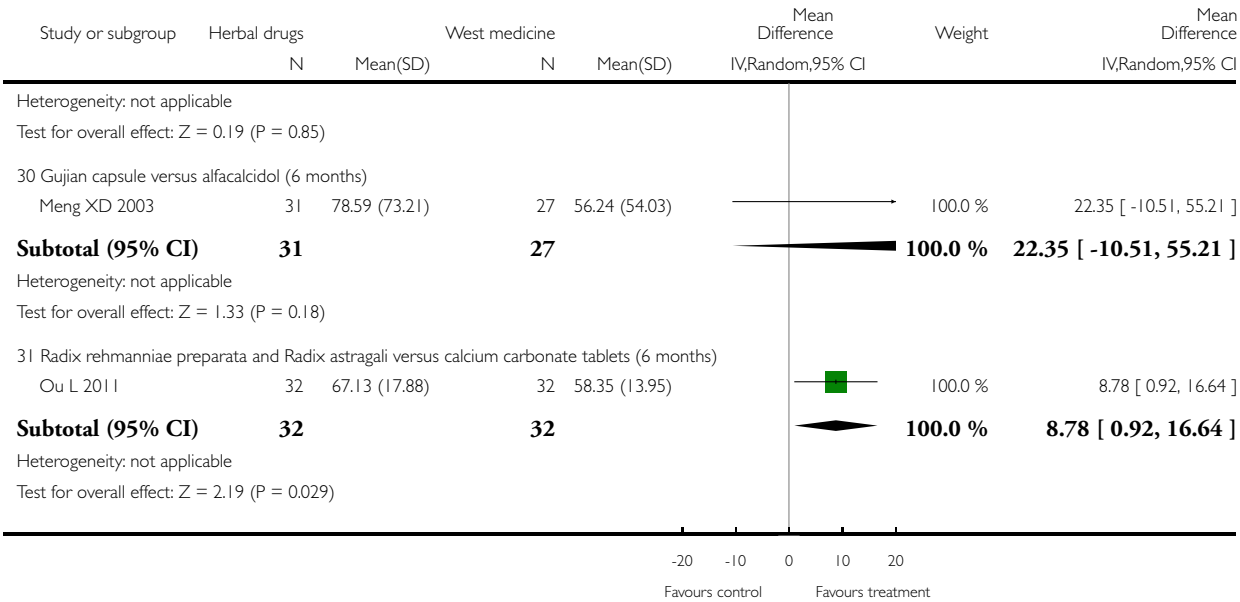


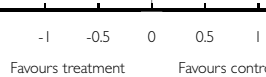
Analysis 3.6. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 6 Serum calcium (Ca).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 6 Serum calcium (Ca)

Study or subgroup	Herbal drugs N	Herbal drugs Mean(SD)	West medicine N	West medicine Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Kanggusong granule versus ipriflavone plus Caltrate (9 months)							
An SJ 2000	31	2.41 (0.18)	40	2.5 (0.17)		100.0 %	-0.09 [-0.17, -0.01]
Subtotal (95% CI)	**31**		**40**			**100.0 %**	**-0.09 [-0.17, -0.01]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.14 (P = 0.032)							
2 Kanggusong granule versus Caltrate (9 months)							
An SJ 2000	31	2.41 (0.18)	40	2.44 (0.15)		100.0 %	-0.03 [-0.11, 0.05]
Subtotal (95% CI)	**31**		**40**			**100.0 %**	**-0.03 [-0.11, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.75 (P = 0.45)							
3 Gushukang granule versus Calcium carbonate with vitamin D chewable tablets (6 months)							
Chen ZX 2002	20	2.35 (0.13)	19	2.37 (0.14)		100.0 %	-0.02 [-0.10, 0.06]
Subtotal (95% CI)	**20**		**19**			**100.0 %**	**-0.02 [-0.10, 0.06]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.46 (P = 0.64)							
4 Strong Bone capsule versus Caltrate (3 months)							
Cui TH 1999	74	2.24 (0.17)	31	2.37 (0.24)		100.0 %	-0.13 [-0.22, -0.04]
Subtotal (95% CI)	**74**		**31**			**100.0 %**	**-0.13 [-0.22, -0.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.74 (P = 0.00611)							
5 Qianggu soft extract versus calcium gluconate (6 months)							
Peng T 2002	78	2.72 (0.04)	21	2.75 (0.05)		100.0 %	-0.03 [-0.05, -0.01]
Subtotal (95% CI)	**78**		**21**			**100.0 %**	**-0.03 [-0.05, -0.01]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.54 (P = 0.011)							
6 Gumikang capsule versus calcium gluconate (6 months)							
Wang CC 2005	32	3.7 (0.01)	28	2.3 (0.01)		100.0 %	1.40 [1.39, 1.41]
Subtotal (95% CI)	**32**		**28**			**100.0 %**	**1.40 [1.39, 1.41]**
Heterogeneity: not applicable							
Test for overall effect: Z = 541.01 (P < 0.00001)							
7 Bushen Jianpi Migu prescription versus Caltrate (3 months)							
Wang ZK 2004	83	2.32 (0.19)	67	2.31 (0.17)		100.0 %	0.01 [-0.05, 0.07]



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Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Subtotal (95% CI)	**83**		**67**			**100.0 %**	**0.01 [-0.05, 0.07]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.34 (P = 0.73)							
8 Kanggusong granule versus ipriflavone (3 months)							
Wu MS 2001	30	2.35 (0.15)	30	2.25 (0.13)		100.0 %	0.10 [0.03, 0.17]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.10 [0.03, 0.17]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.76 (P = 0.0058)							
9 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (6 months)							
Xie YM 1997	26	2.39 (0.21)	18	2.29 (0.28)		100.0 %	0.10 [-0.05, 0.25]
Subtotal (95% CI)	**26**		**18**			**100.0 %**	**0.10 [-0.05, 0.25]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.29 (P = 0.20)							
10 Yinyanghuo versus conjugated oestrogens (3 to 6 months)							
Zhao LN 2003	15	2.79 (0.57)	10	2.25 (0.16)		100.0 %	0.54 [0.23, 0.85]
Subtotal (95% CI)	**15**		**10**			**100.0 %**	**0.54 [0.23, 0.85]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.47 (P = 0.00052)							
11 Gushukang granule versus ipriflavone (6 months)							
Wu MS 2007	30	2.33 (0.11)	30	2.35 (0.09)		100.0 %	-0.02 [-0.07, 0.03]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**-0.02 [-0.07, 0.03]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.77 (P = 0.44)							
12 Shenyao capsules versus Caltrate (6 months)							
Chen NQ 2006	50	2.53 (0.31)	50	2.51 (0.17)		100.0 %	0.02 [-0.08, 0.12]
Subtotal (95% CI)	**50**		**50**			**100.0 %**	**0.02 [-0.08, 0.12]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.40 (P = 0.69)							
13 Guli powder versus Caltrate (3 months)							
Lan ZX 2006	30	2.31 (0.14)	30	2.22 (0.14)		100.0 %	0.09 [0.02, 0.16]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.09 [0.02, 0.16]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.49 (P = 0.013)							
14 Prescription for tonifying kidney versus ipriflavone (6 months)							
Wu MS 2007	30	2.35 (0.12)	30	2.35 (0.09)		100.0 %	0.0 [-0.05, 0.05]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.0 [-0.05, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.0 (P = 1.0)							

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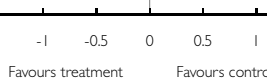
Study or subgroup	Herbal drugs N	Mean(SD)	West medicine N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
15 Kidney meridian sticking versus ipriflavone (6 months)							
Wu MS 2007	30	2.34 (0.12)	30	2.35 (0.09)		100.0 %	-0.01 [-0.06, 0.04]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**-0.01 [-0.06, 0.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.37 (P = 0.72)							
16 Urinary bladder meridian sticking versus ipriflavone (6 months)							
Wu MS 2007	30	2.34 (0.11)	30	2.35 (0.09)		100.0 %	-0.01 [-0.06, 0.04]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**-0.01 [-0.06, 0.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.39 (P = 0.70)							
17 Gushen Yijing tang versus Caltrate (6 months)							
Zhong RQ 2007	39	2.53 (0.34)	41	2.3 (0.17)		100.0 %	0.23 [0.11, 0.35]
Subtotal (95% CI)	**39**		**41**			**100.0 %**	**0.23 [0.11, 0.35]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.80 (P = 0.00015)							
18 Gukang oral liquid versus alendronate sodium tablets (6 months)							
Wang JM 2008	33	2.35 (0.06)	37	2.37 (0.11)		100.0 %	-0.02 [-0.06, 0.02]
Subtotal (95% CI)	**33**		**37**			**100.0 %**	**-0.02 [-0.06, 0.02]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.96 (P = 0.34)							
19 Qianggu capsule versus active vitamin D3 (6 months)							
Wang J 2007	28	2.33 (0.13)	26	2.32 (0.12)		100.0 %	0.01 [-0.06, 0.08]
Subtotal (95% CI)	**28**		**26**			**100.0 %**	**0.01 [-0.06, 0.08]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.29 (P = 0.77)							
20 Jiangu capsule versus Caltrate (12 months)							
Wang YZ 2008	63	2.27 (0.13)	62	2.33 (0.15)		100.0 %	-0.06 [-0.11, -0.01]
Subtotal (95% CI)	**63**		**62**			**100.0 %**	**-0.06 [-0.11, -0.01]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.39 (P = 0.017)							
21 Bushen Yangxue tang versus calcium gluconate (6 months)							
Zhan ML 2007	20	2.25 (0.25)	20	2.12 (0.16)		100.0 %	0.13 [0.00, 0.26]
Subtotal (95% CI)	**20**		**20**			**100.0 %**	**0.13 [0.00, 0.26]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.96 (P = 0.050)							
22 Bushenjianpi Zhuangguyin versus Caltrate and calcitonin (12 weeks)							
Zhang XG 2011	50	3.89 (0.21)	50	3.15 (0.21)		100.0 %	0.74 [0.66, 0.82]
Subtotal (95% CI)	**50**		**50**			**100.0 %**	**0.74 [0.66, 0.82]**



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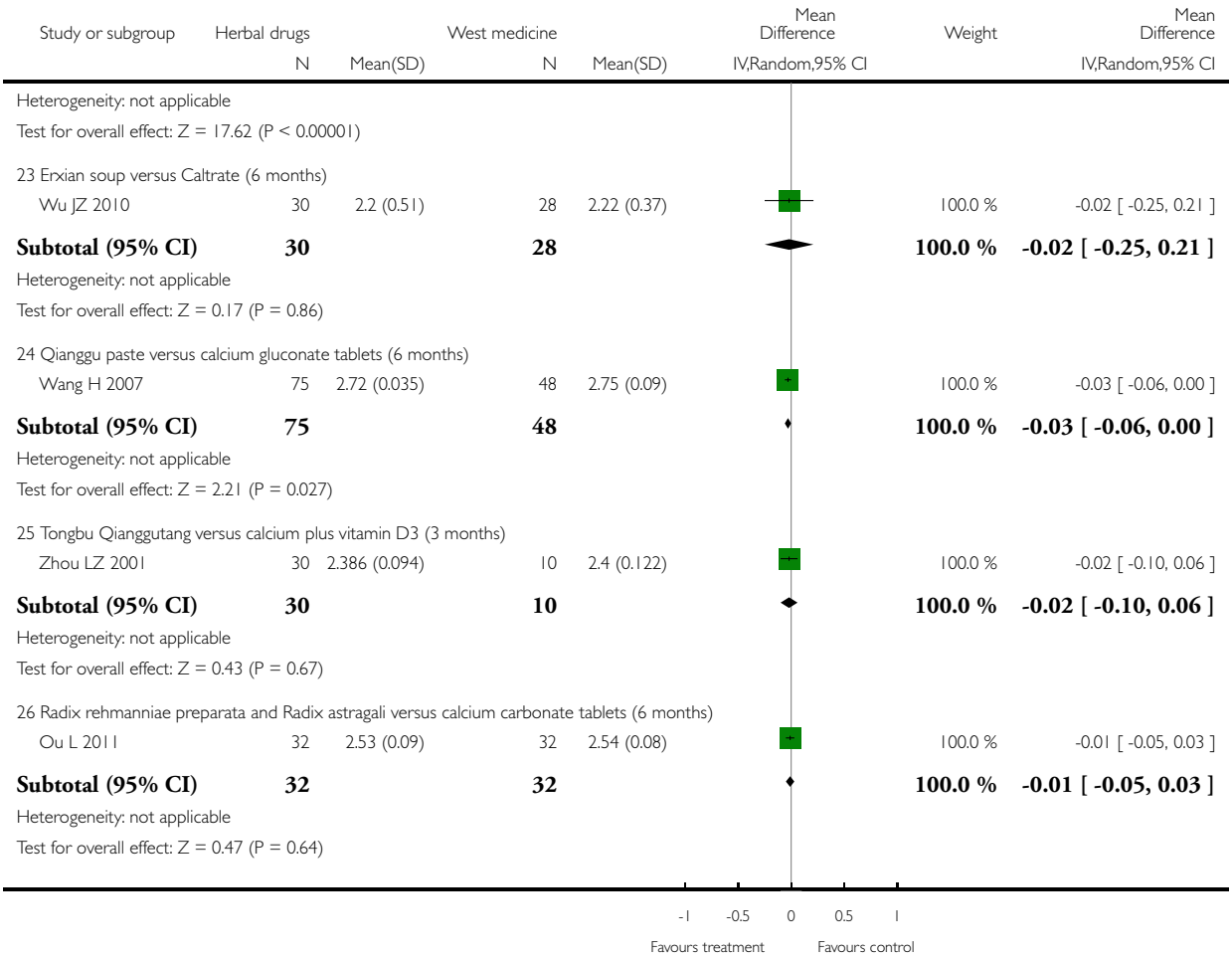
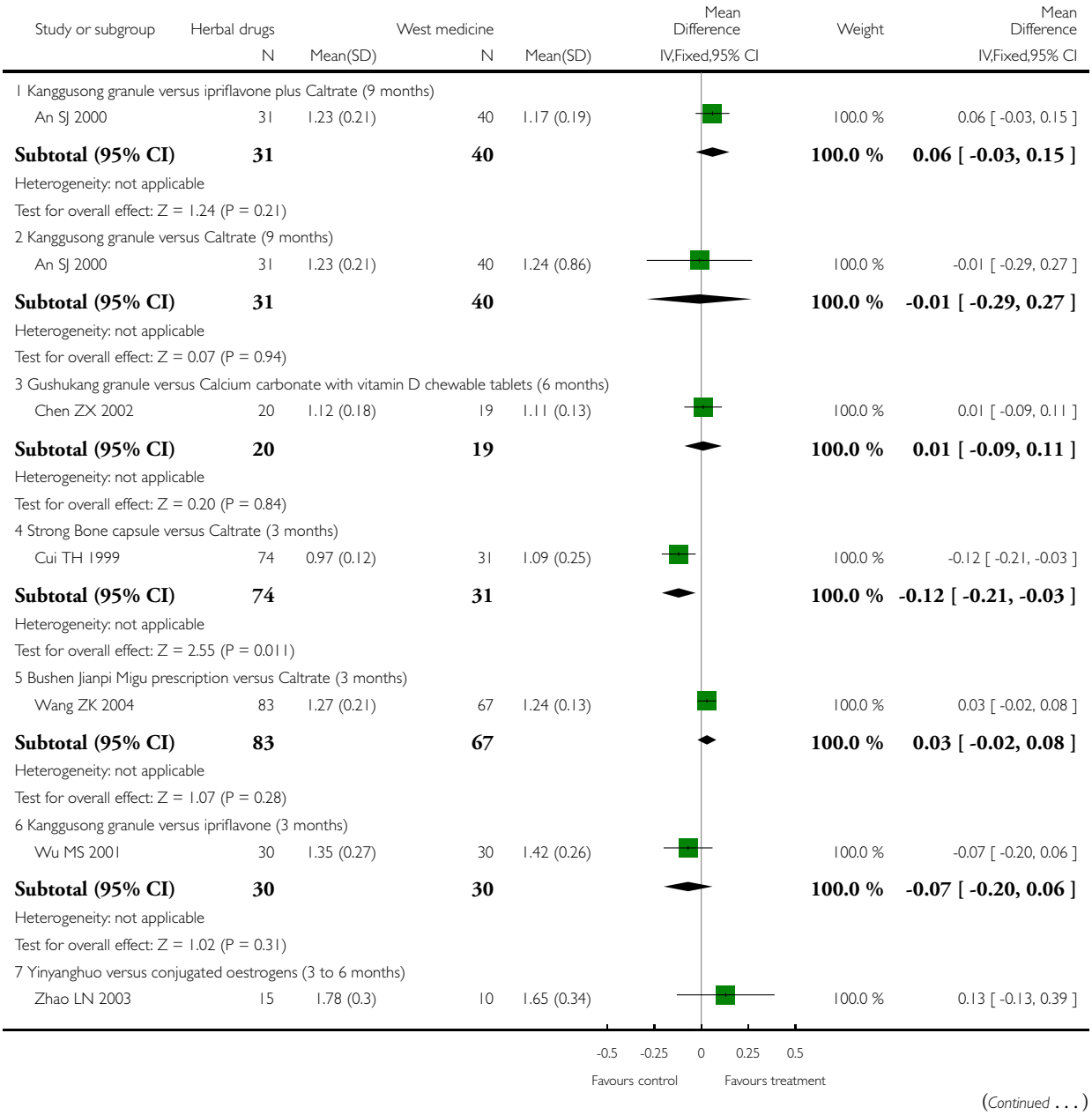


Analysis 3.7. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 7 Phosphorus (P).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 7 Phosphorus (P)



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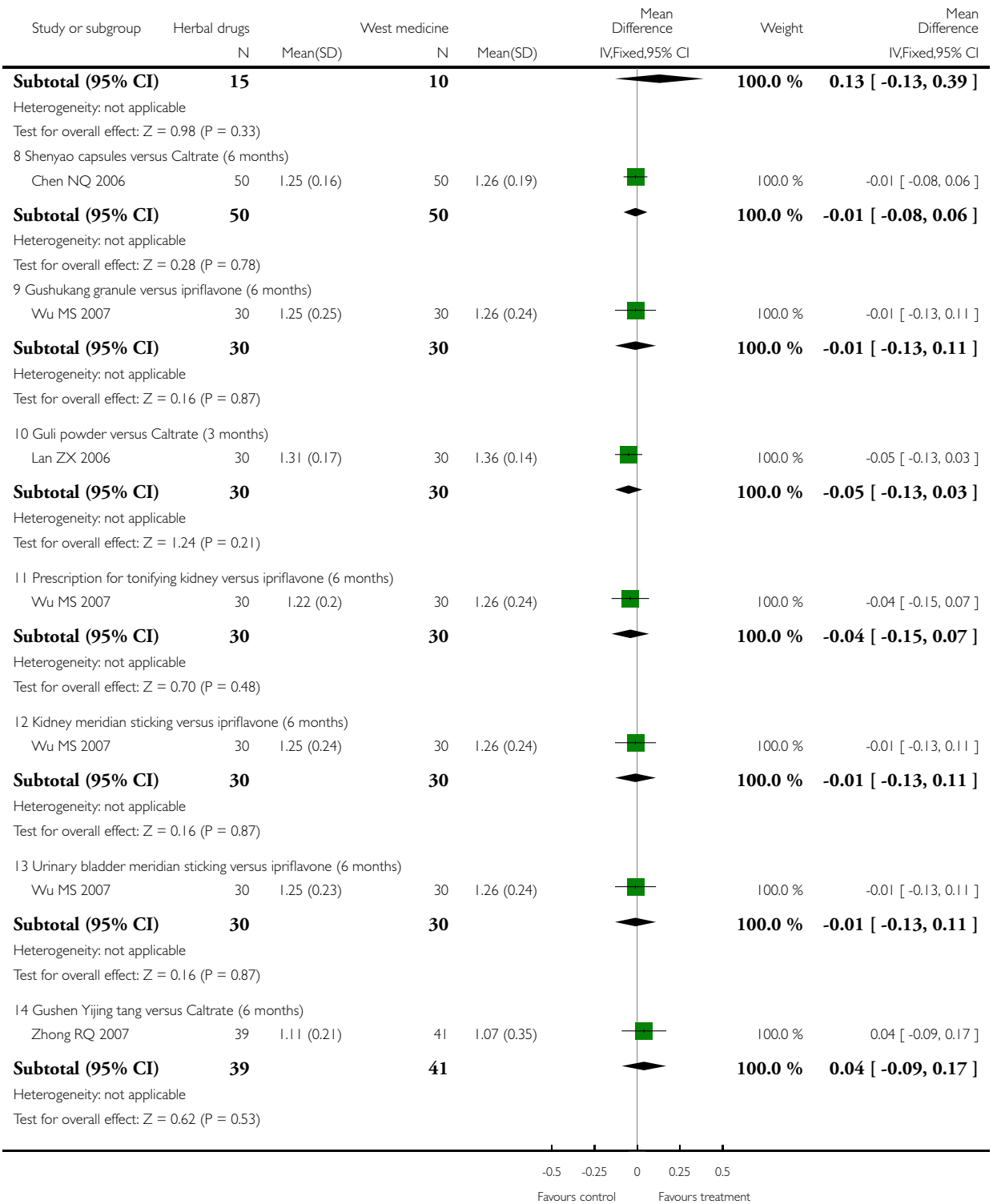

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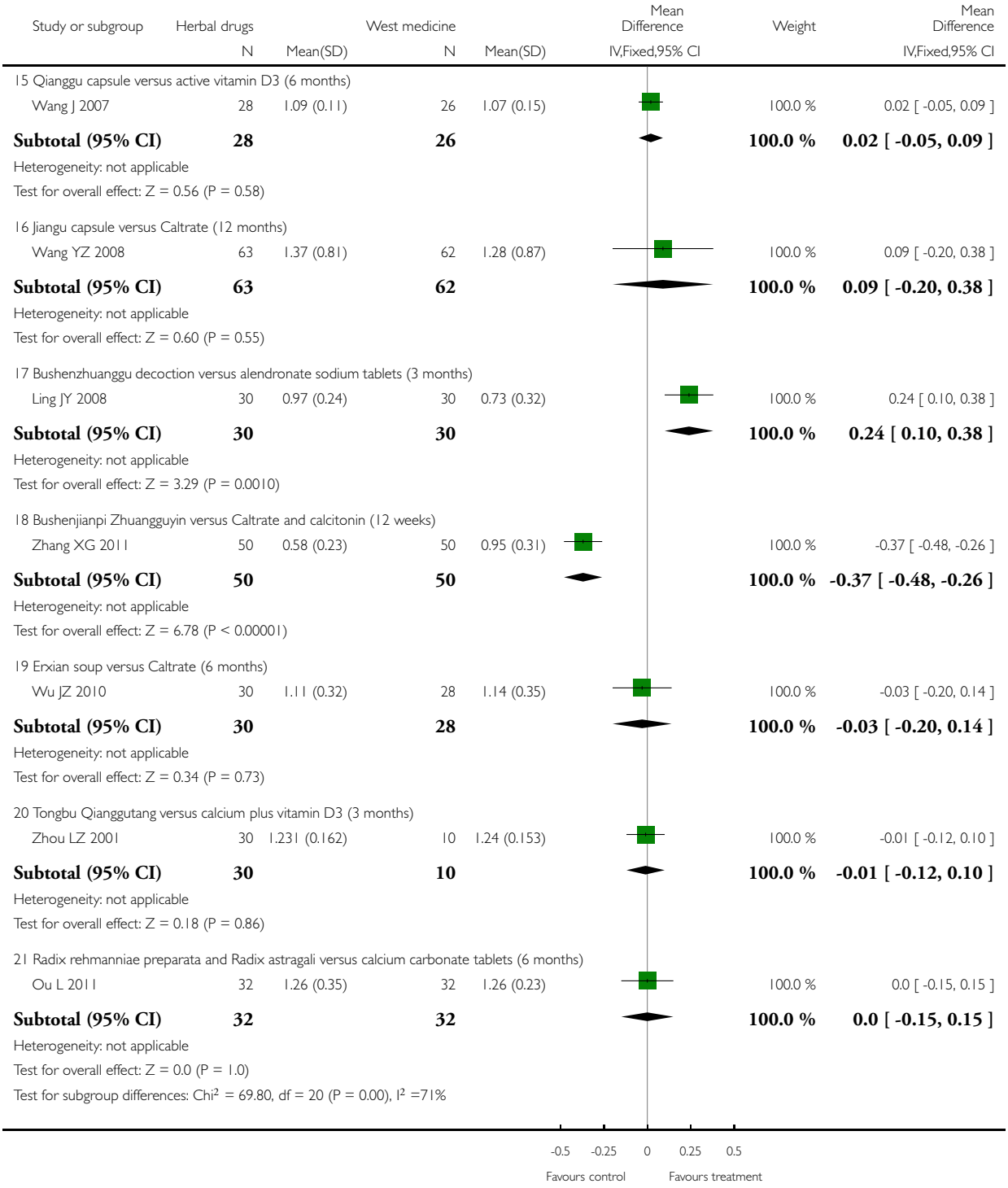
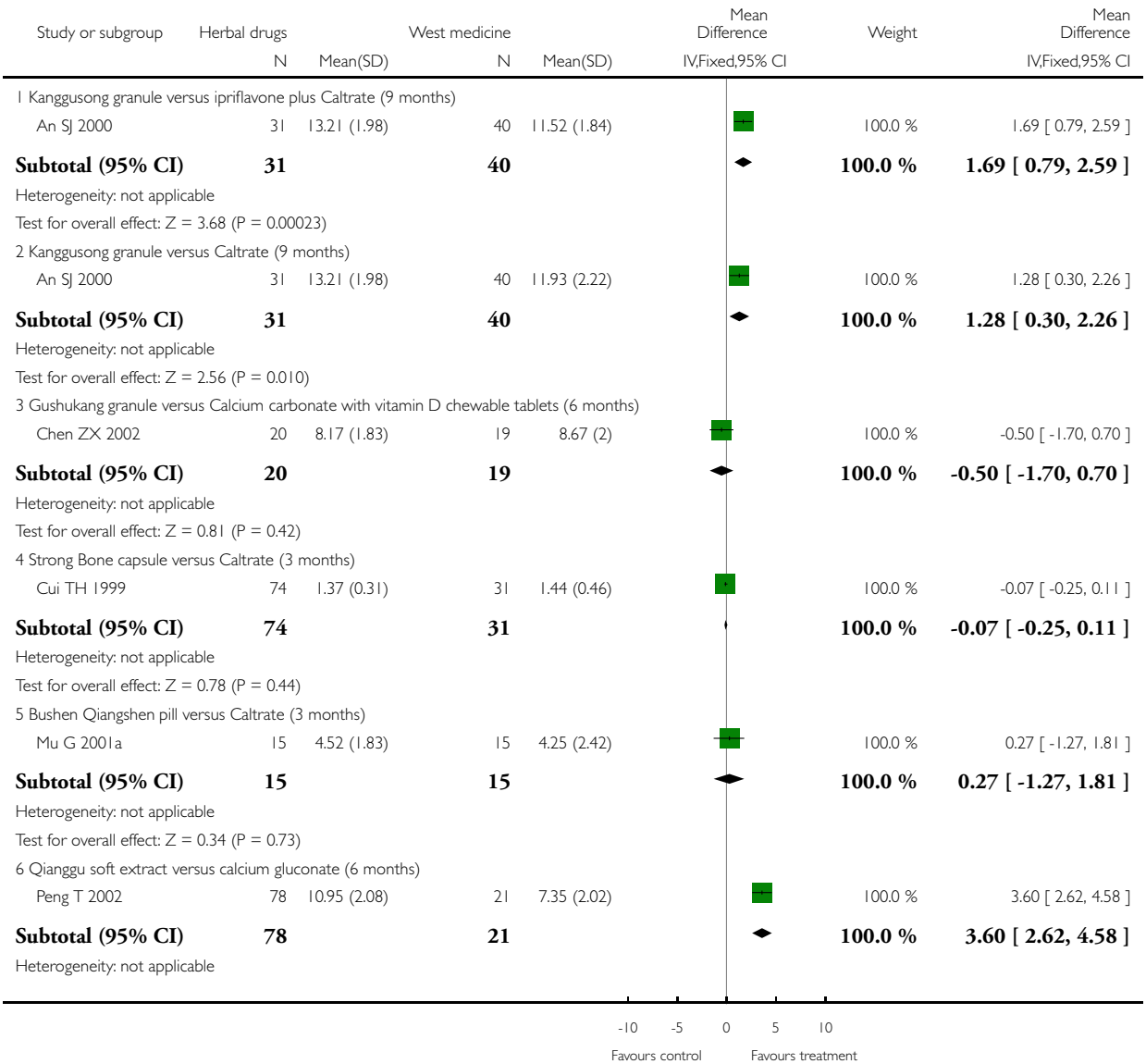


Analysis 3.8. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 8 Alkaline phosphatase (ALP).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 8 Alkaline phosphatase (ALP)



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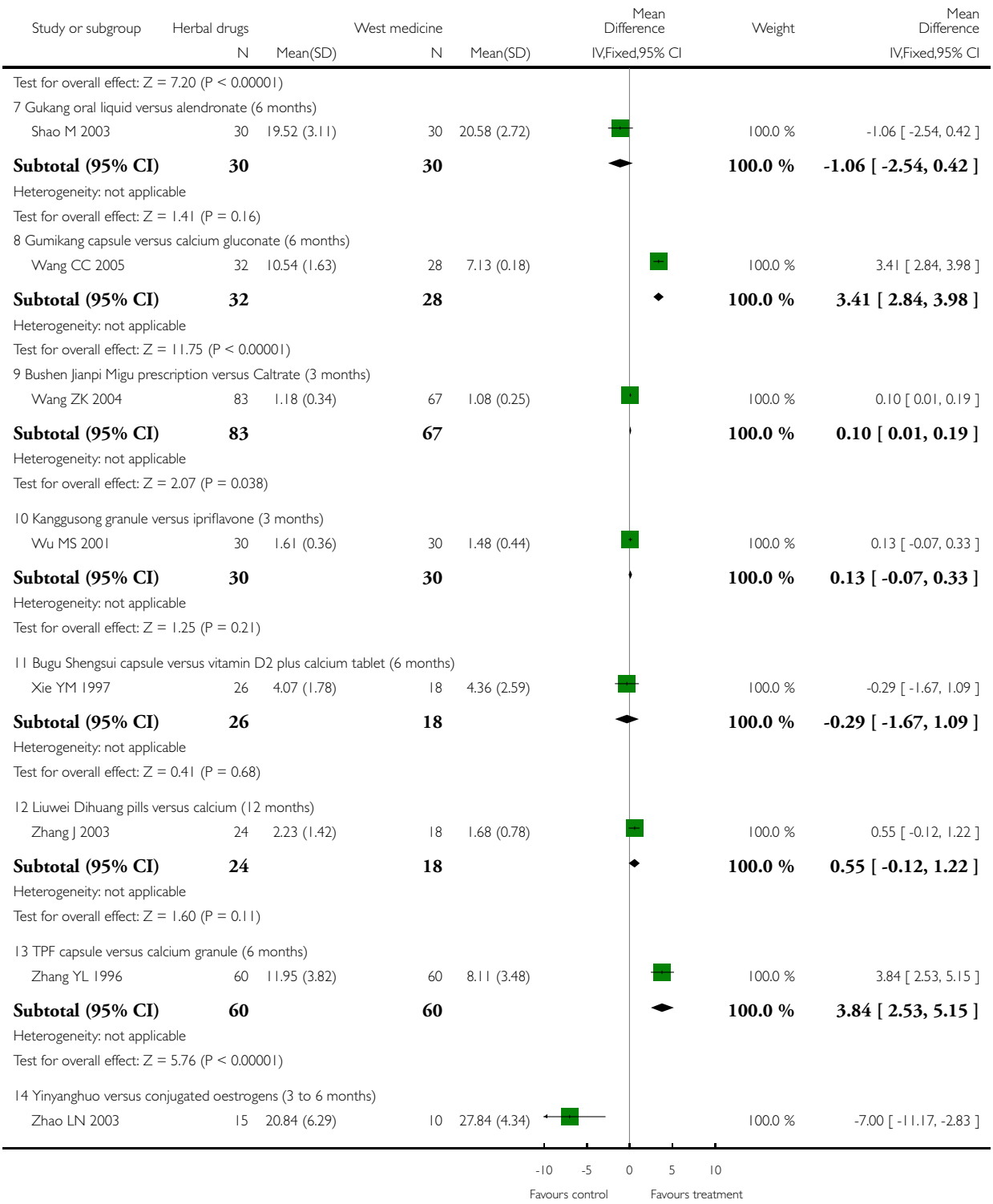

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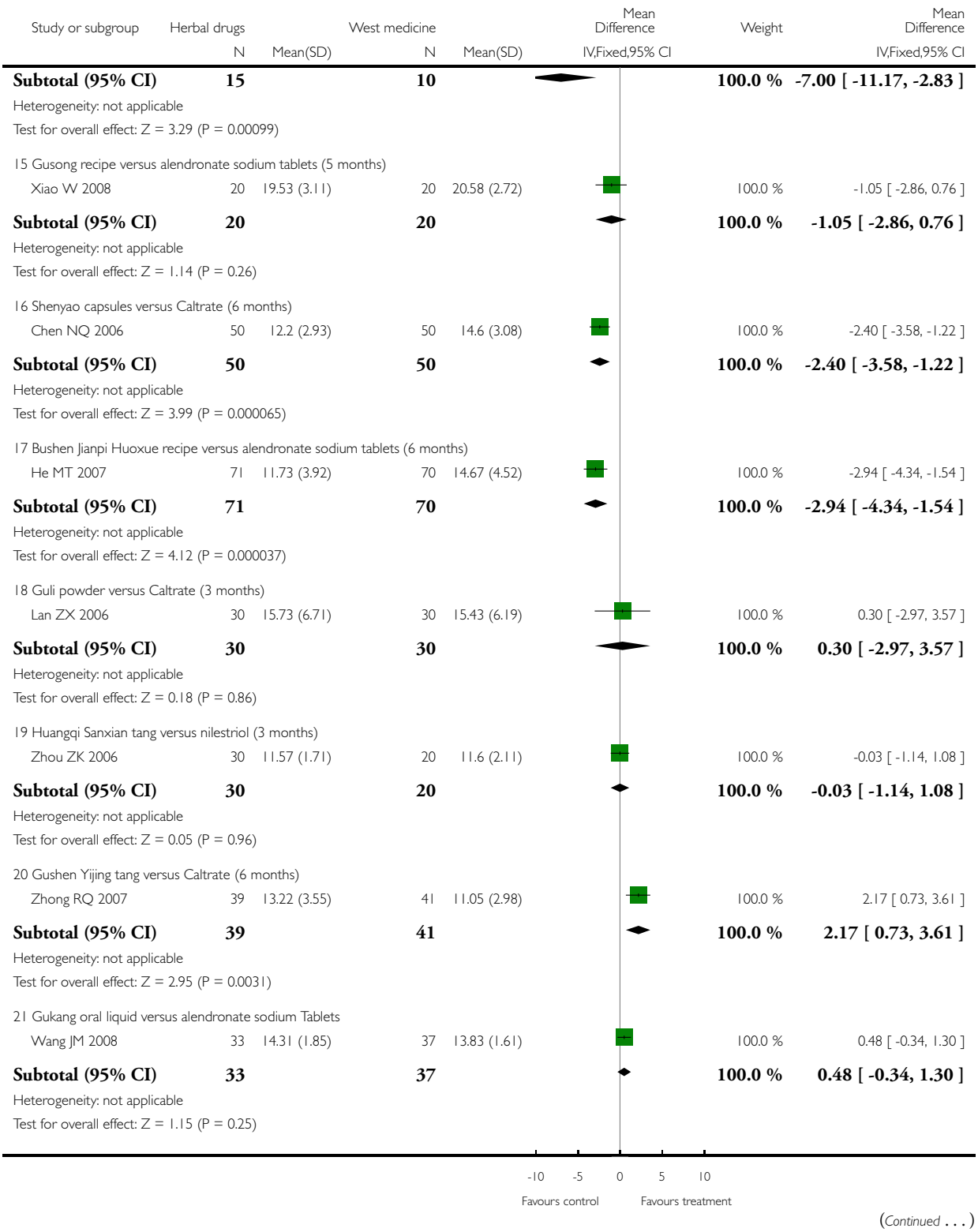

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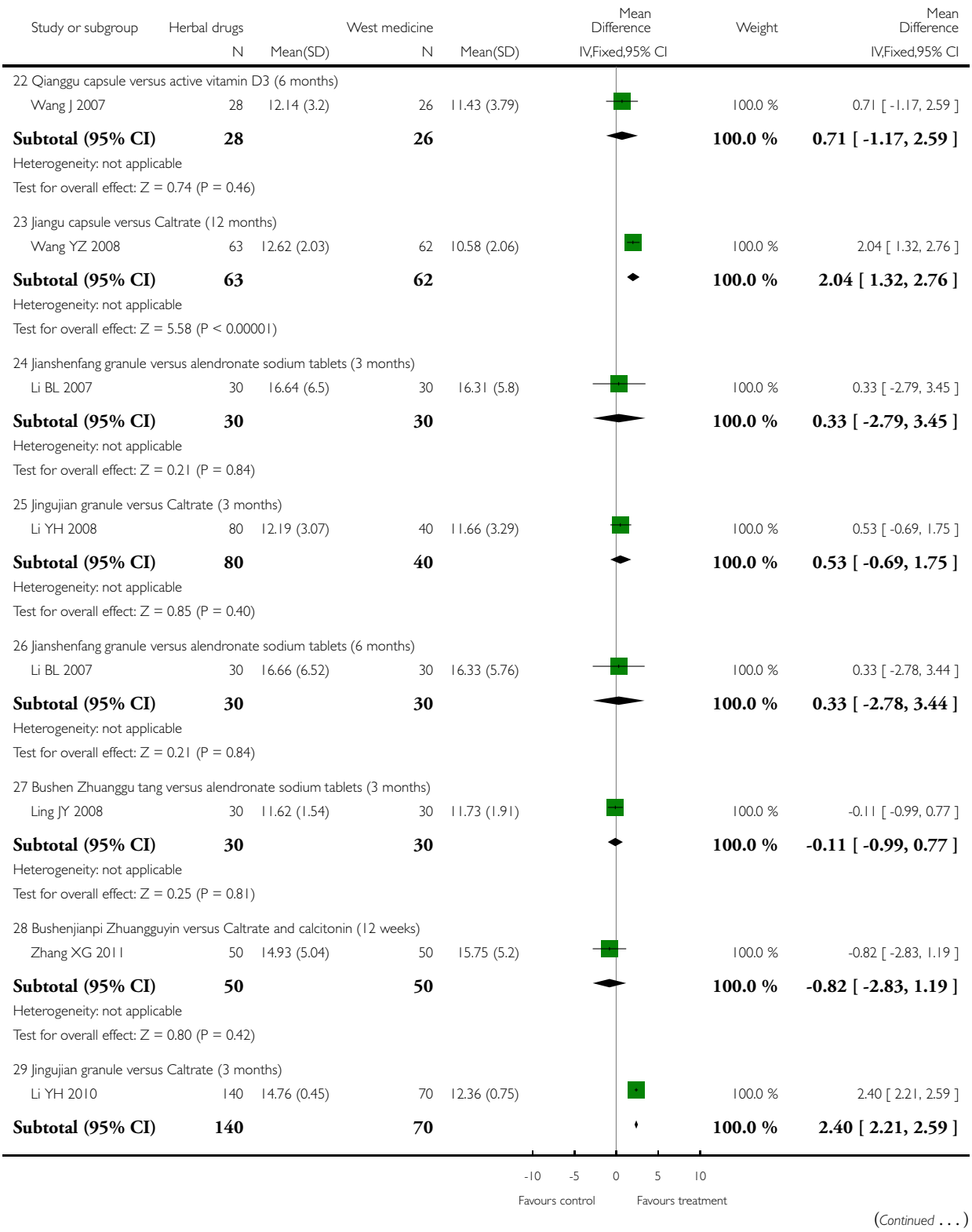

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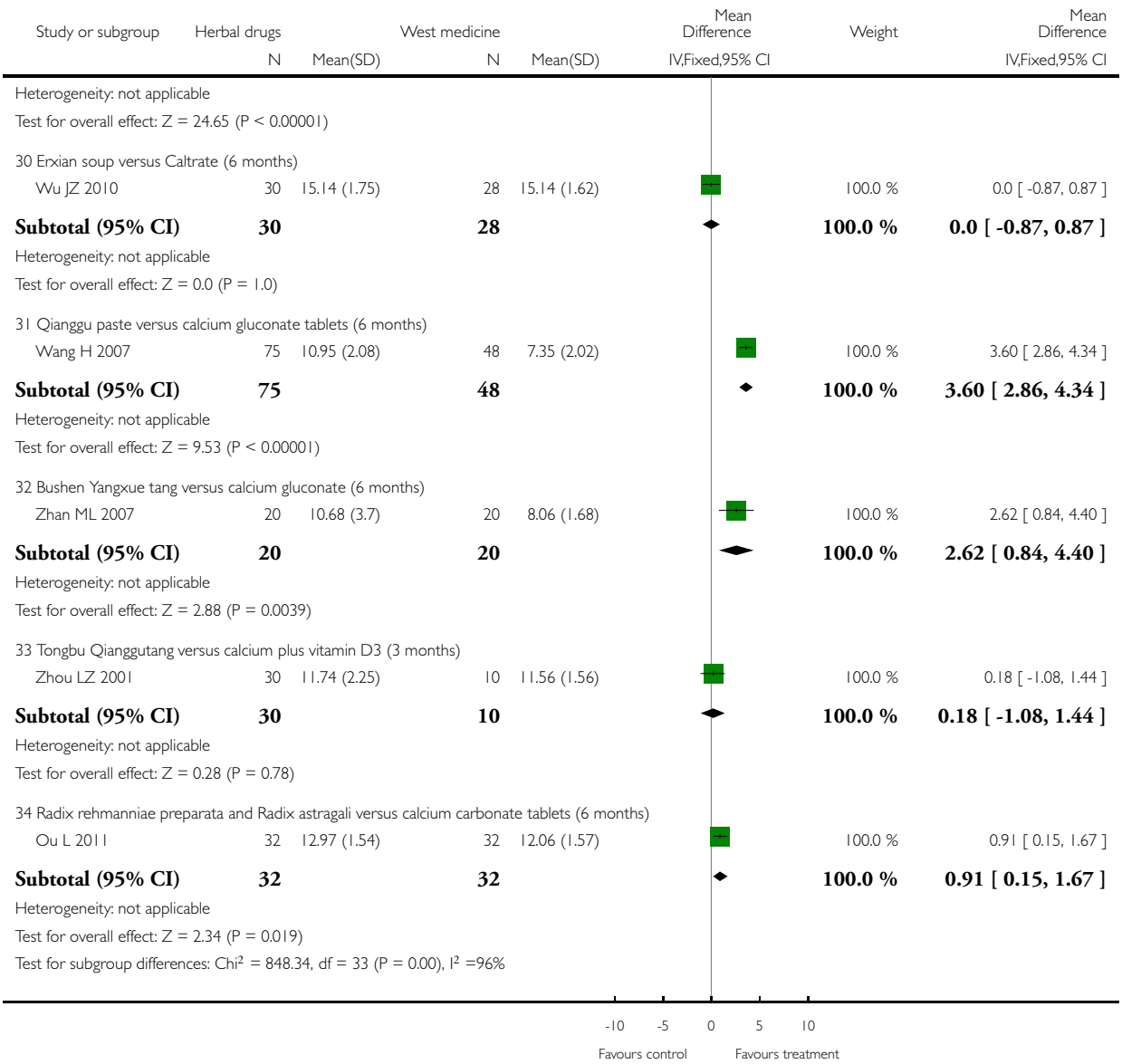
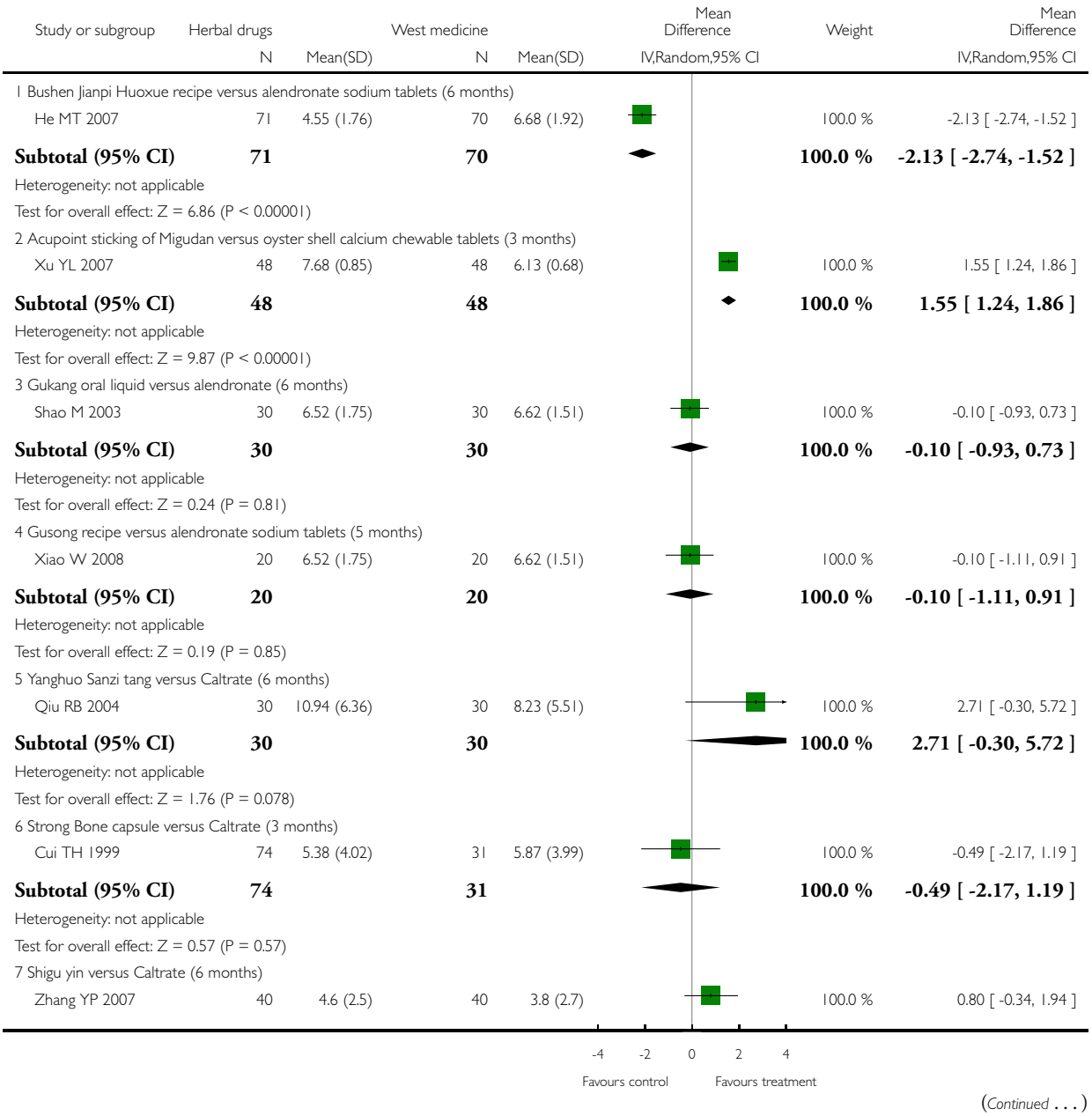


Analysis 3.9. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 9 Bone Gla protein (BGP).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 9 Bone Gla protein (BGP)



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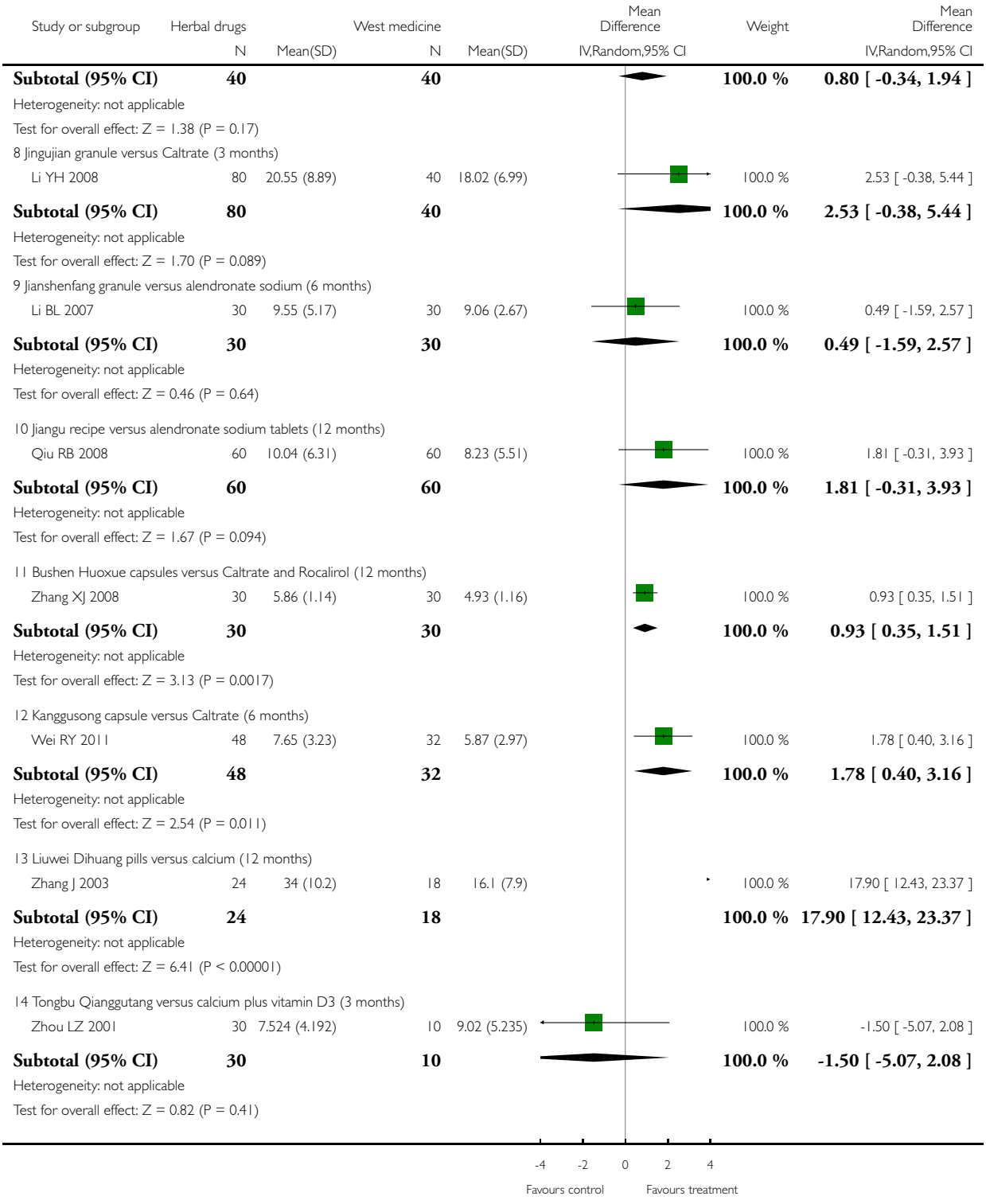

Analysis 3.10. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 10 Interleukin-6 (IL-6).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 10 Interleukin-6 (IL-6)

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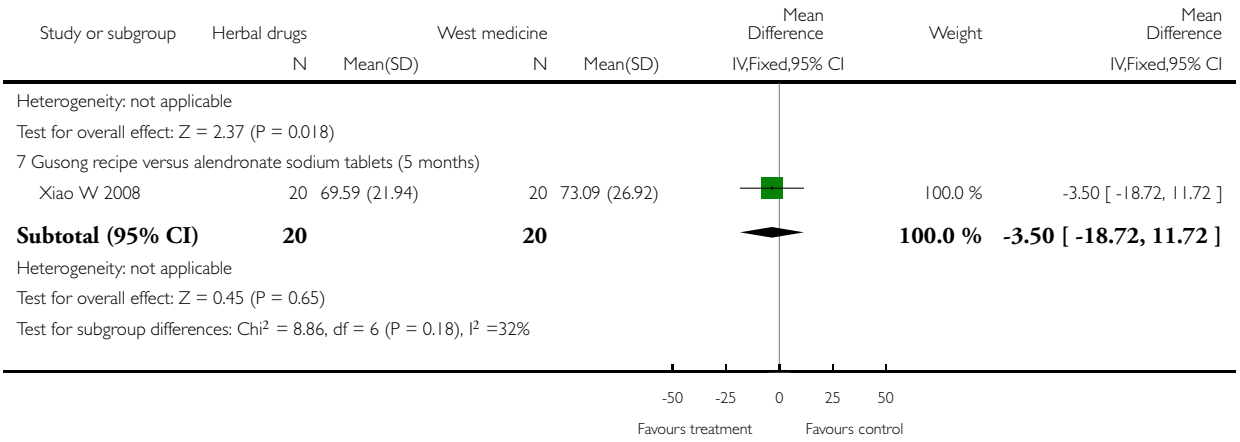
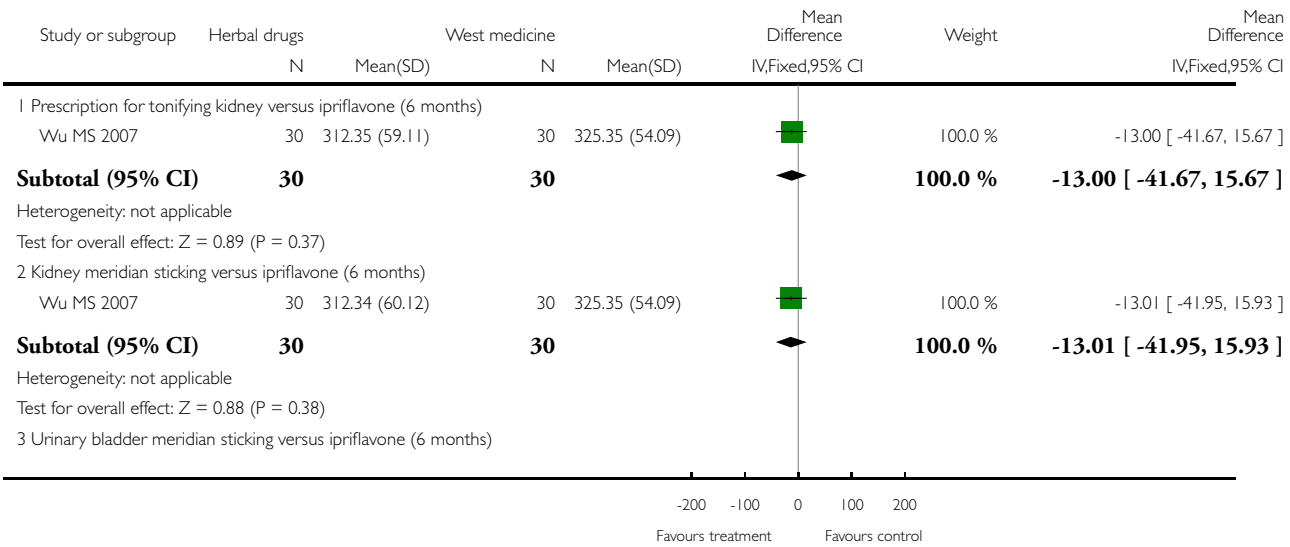


Analysis 3.11. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 11 Parathyroid hormone (PTH).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 11 Parathyroid hormone (PTH)



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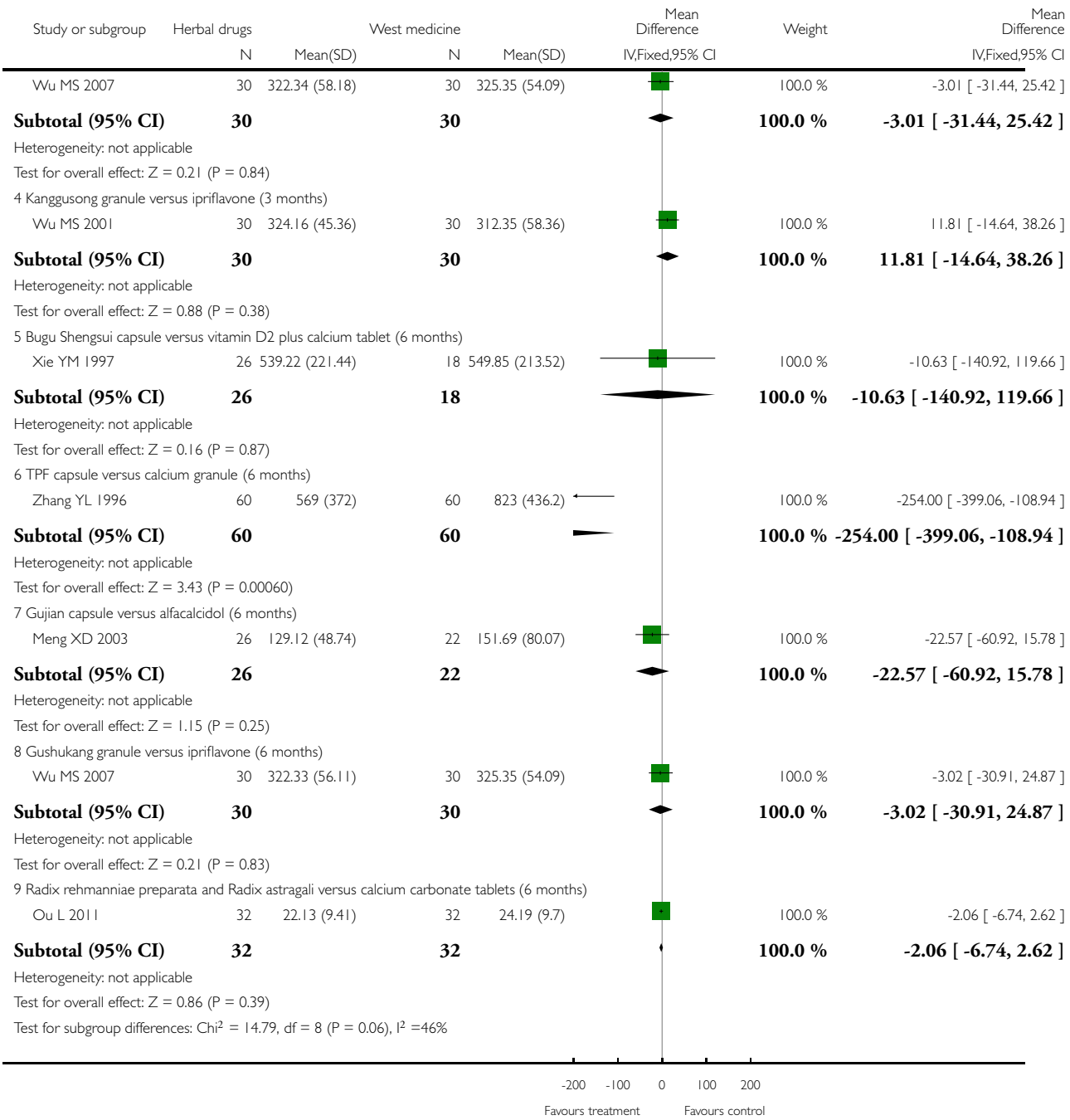


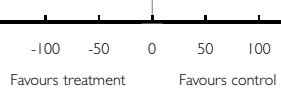
Analysis 3.12. Comparison 3 Chinese herbal medicines versus western medicine, Outcome 12 Computed tomography (CT).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 3 Chinese herbal medicines versus western medicine

Outcome: 12 Computed tomography (CT)

Study or subgroup	Herbal drugs N	Herbal drugs Mean(SD)	West medicine N	West medicine Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Prescription for tonifying kidney versus ipriflavone (6 months)							
Wu MS 2007	30	74.22 (9.2)	30	73.26 (9.24)		100.0 %	0.96 [-3.71, 5.63]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.96 [-3.71, 5.63]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.40 (P = 0.69)							
2 Kidney meridian sticking versus ipriflavone (6 months)							
Wu MS 2007	30	72.25 (8.24)	30	73.26 (9.24)		100.0 %	-1.01 [-5.44, 3.42]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**-1.01 [-5.44, 3.42]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.45 (P = 0.65)							
3 Urinary bladder meridian sticking versus ipriflavone (6 months)							
Wu MS 2007	30	73.25 (9.23)	30	73.26 (9.24)		100.0 %	-0.01 [-4.68, 4.66]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**-0.01 [-4.68, 4.66]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.00 (P = 1.0)							
4 Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (6 months)							
Xie YM 1997	26	48.43 (60.51)	18	32.5 (70.69)		100.0 %	15.93 [-24.16, 56.02]
Subtotal (95% CI)	**26**		**18**			**100.0 %**	**15.93 [-24.16, 56.02]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.78 (P = 0.44)							
5 Strong Bone capsule versus Caltrate (3 months)							
Cui TH 1999	74	26.79 (25.16)	31	10.54 (2.86)		100.0 %	16.25 [10.43, 22.07]
Subtotal (95% CI)	**74**		**31**			**100.0 %**	**16.25 [10.43, 22.07]**
Heterogeneity: not applicable							
Test for overall effect: Z = 5.47 (P < 0.00001)							
6 Jingujian granule versus Caltrate (3 months)							
Li YH 2010	140	63.21 (23.78)	70	41.23 (12.97)		100.0 %	21.98 [17.01, 26.95]
Subtotal (95% CI)	**140**		**70**			**100.0 %**	**21.98 [17.01, 26.95]**
Heterogeneity: not applicable							
Test for overall effect: Z = 8.66 (P < 0.00001)							
7 TPF capsule versus Calcium granule (6 months)							
Zhang YL 1996	60	48.6 (18.3)	60	30.89 (16.2)		100.0 %	17.71 [11.53, 23.89]



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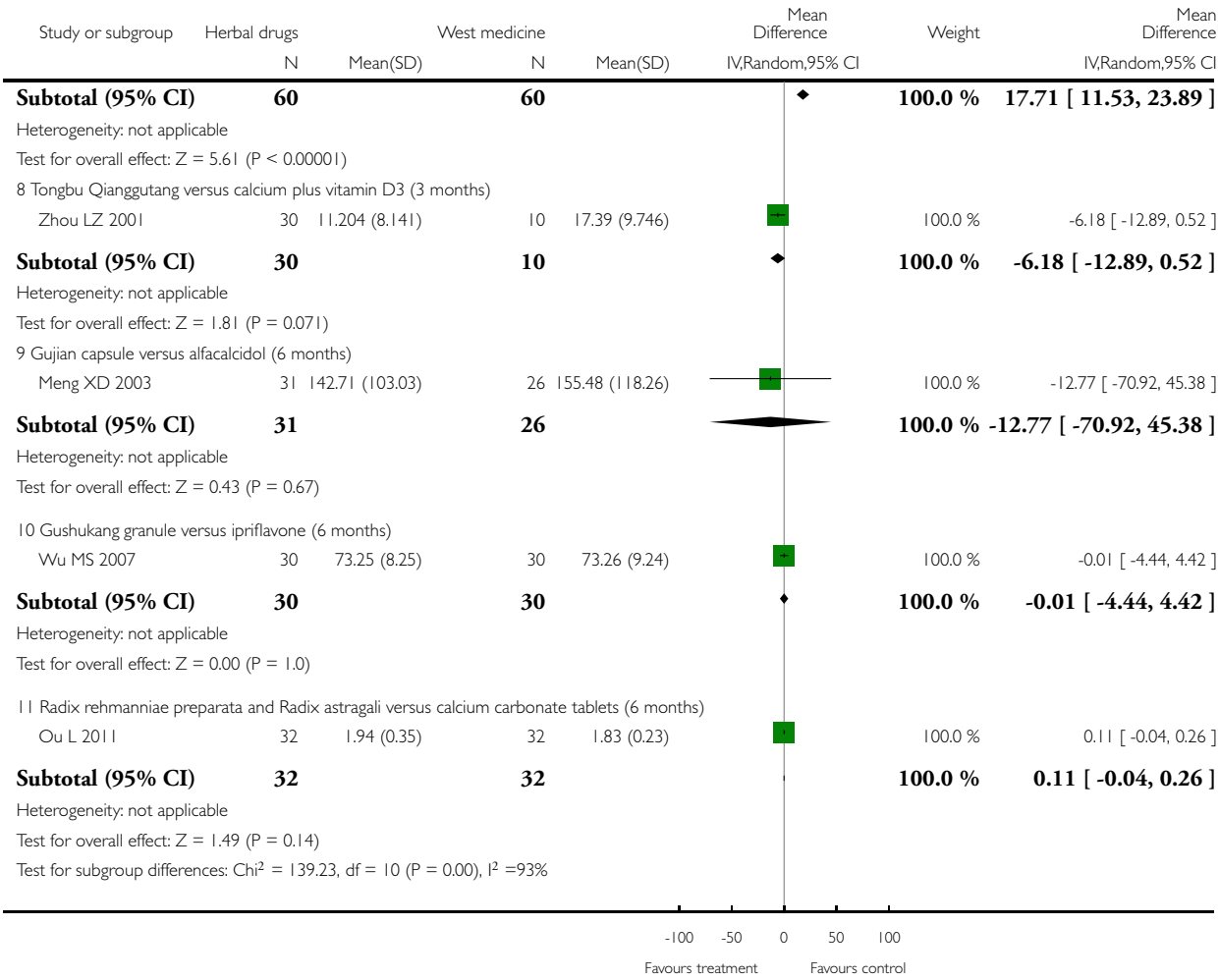
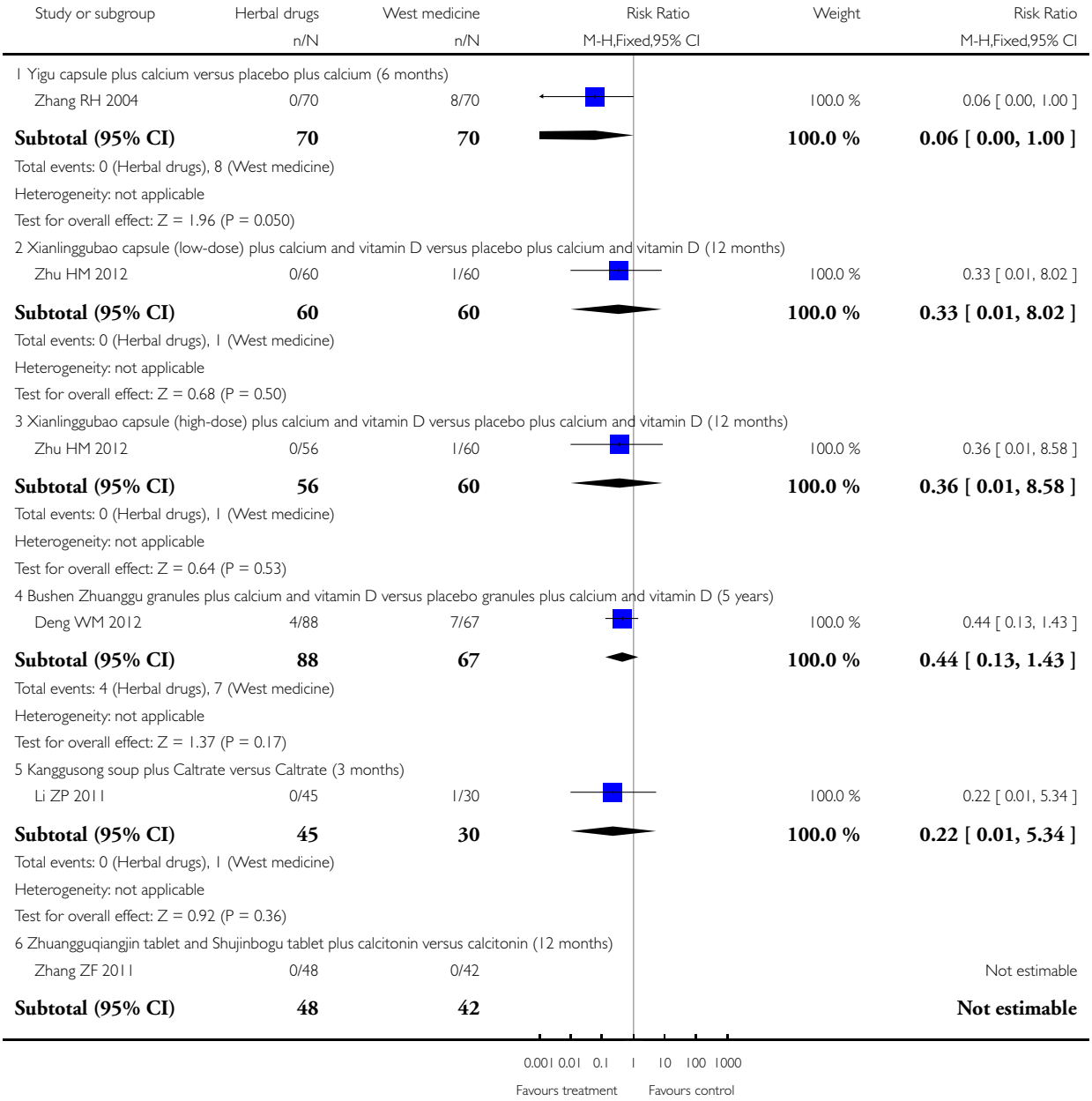


Analysis 4.1. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 1 New fractures.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 1 New fractures



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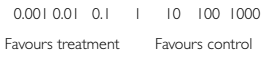
Study or subgroup	Herbal drugs n/N	West medicine n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Total events: 0 (Herbal drugs), 0 (West medicine)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Test for subgroup differences: Chi^2 = 1.68, df = 4 (P = 0.79), I^2 =0.0%					



Analysis 4.2. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 2 Bone mineral density (BMD).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 2 Bone mineral density (BMD)

Study or subgroup	Herbal plus drugs N	Mean(SD)	Drugs N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol (BMD of lumbar spine, 6 months)							
Chen FS 2001	32	0.59 (0.12)	32	0.53 (0.1)		100.0 %	0.06 [0.01, 0.11]
Subtotal (95% CI)	**32**		**32**			**100.0 %**	**0.06 [0.01, 0.11]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.17 (P = 0.030)							
2 Jiarong tablet plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)							
Chen YQ 2001	20	0.975 (0.201)	21	0.93 (0.104)		100.0 %	0.04 [-0.05, 0.14]
Subtotal (95% CI)	**20**		**21**			**100.0 %**	**0.04 [-0.05, 0.14]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.89 (P = 0.37)							
3 Ziyin Bushen Zhuanggu prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin (BMD of lumbar spine, 8 months)							
Li HW 2004	25	0.99 (0.09)	20	0.85 (0.1)		100.0 %	0.14 [0.08, 0.20]
Subtotal (95% CI)	**25**		**20**			**100.0 %**	**0.14 [0.08, 0.20]**
Heterogeneity: not applicable							
Test for overall effect: Z = 4.88 (P < 0.00001)							
4 Zhuanggu capsule plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)							

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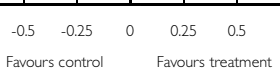
Study or subgroup	Herbal plus drugs N	Mean(SD)	Drugs N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Li SL 2004	30	0.69 (0.01)	30	0.68 (0.02)		100.0 %	0.01 [0.00, 0.02]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.01 [0.00, 0.02]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.45 (P = 0.014)							
5 Antai capsule plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)							
Wang SW 2003	65	0.95 (0.11)	63	0.91 (0.13)		100.0 %	0.04 [0.00, 0.08]
Subtotal (95% CI)	**65**		**63**			**100.0 %**	**0.04 [0.00, 0.08]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.88 (P = 0.061)							
6 Bushen Zhuanggutang plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)							
Ye AN 1998	31	1.12 (0.13)	29	0.98 (0.19)		100.0 %	0.14 [0.06, 0.22]
Subtotal (95% CI)	**31**		**29**			**100.0 %**	**0.14 [0.06, 0.22]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.31 (P = 0.00094)							
7 Zishen prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin (BMD of lumbar spine, 8 months)							
Zhao G 2002	25	0.99 (0.09)	20	0.85 (0.1)		100.0 %	0.14 [0.08, 0.20]
Subtotal (95% CI)	**25**		**20**			**100.0 %**	**0.14 [0.08, 0.20]**
Heterogeneity: not applicable							
Test for overall effect: Z = 4.88 (P < 0.00001)							
8 Guilu Erxiantang plus calcium carbonate tablet versus calcium carbonate tablet (BMD of lumbar spine, 6 months)							
Zhou XT 2001	45	0.838 (0.125)	40	0.8 (0.15)		100.0 %	0.03 [-0.03, 0.09]
Subtotal (95% CI)	**45**		**40**			**100.0 %**	**0.03 [-0.03, 0.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.13 (P = 0.26)							
9 Guben Zhuanggu capsules plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)							
Zou JJ 2005	30	0.65 (0.03)	30	0.62 (0.03)		100.0 %	0.03 [0.01, 0.05]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**0.03 [0.01, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.87 (P = 0.00011)							
10 Migu tablet plus Caltrate versus Caltrate (BMD of Lumbar spine, 12 months)							
Xie J 2004	24	0.87 (0.02)	20	0.79 (0.01)		100.0 %	0.08 [0.07, 0.09]
Subtotal (95% CI)	**24**		**20**			**100.0 %**	**0.08 [0.07, 0.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 17.19 (P < 0.00001)							
11 Shugan zishen huoxue tang plus Caltrate and alendronate sodium versus Caltrate plus alendronate sodium (BMD of lumbar spine, 6 months)							
Han XL 2007	25	0.96 (0.09)	17	0.84 (0.01)		100.0 %	0.12 [0.08, 0.16]
Subtotal (95% CI)	**25**		**17**			**100.0 %**	**0.12 [0.08, 0.16]**
Heterogeneity: not applicable							
Test for overall effect: Z = 6.61 (P < 0.00001)							



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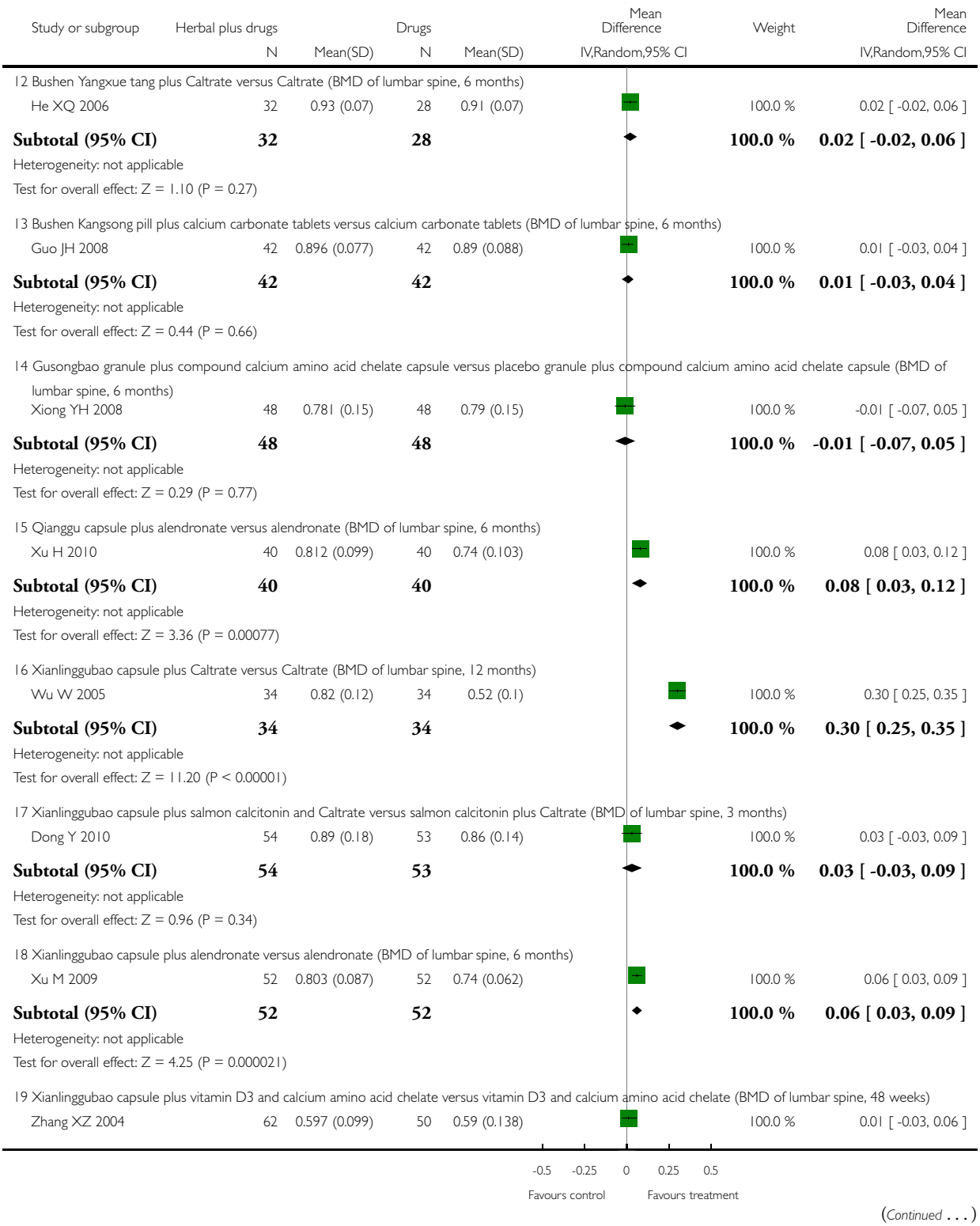

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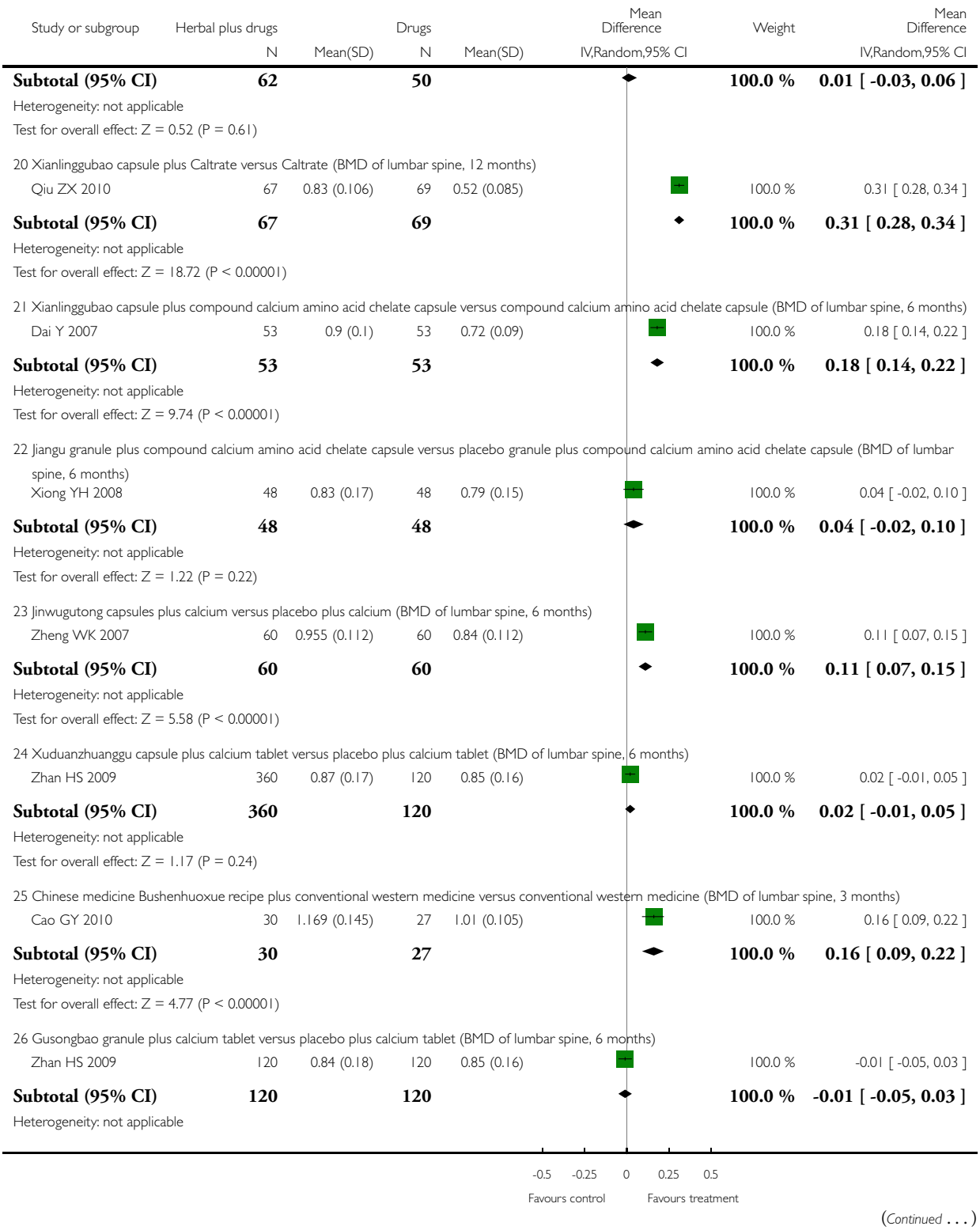

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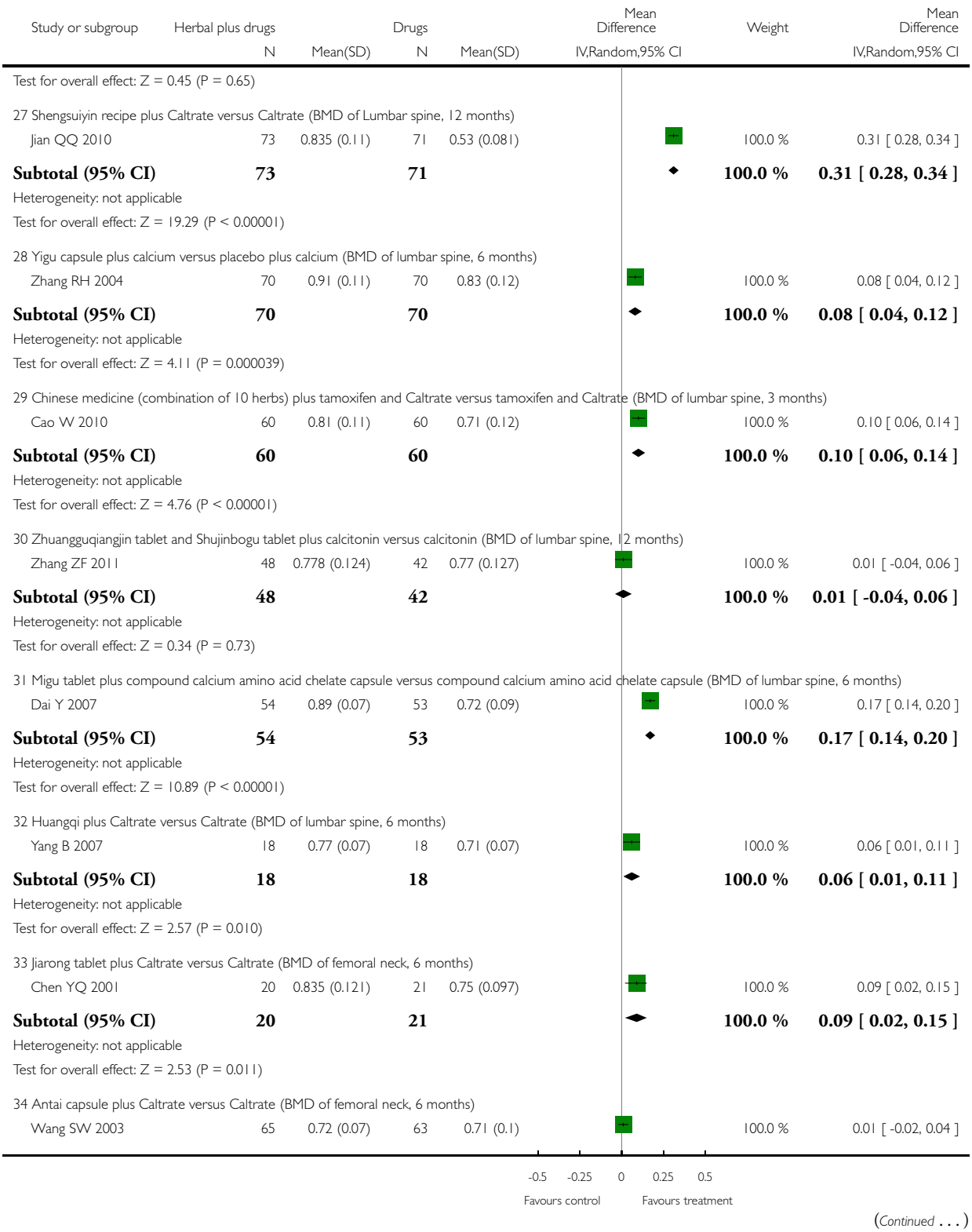

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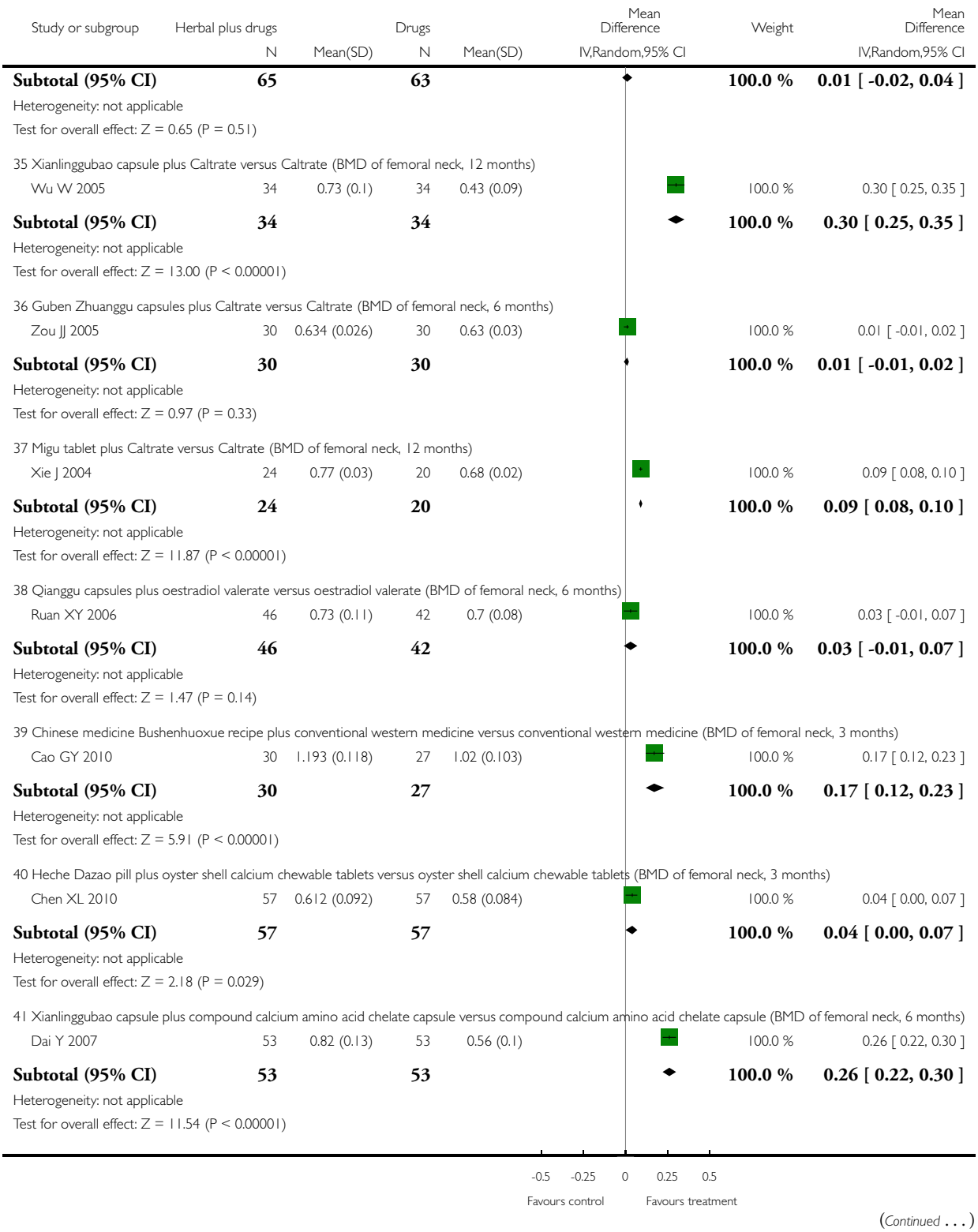

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Study or subgroup	Herbal plus drugs N	Mean(SD)	Drugs N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
42 Huangqi plus Caltrate versus Caltrate (BMD of femoral neck, 6 months)							
Yang B 2007	18	0.69 (0.07)	18	0.62 (0.06)		100.0 %	0.07 [0.03, 0.11]
Subtotal (95% CI)	**18**		**18**			**100.0 %**	**0.07 [0.03, 0.11]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.22 (P = 0.0013)							
43 Gusongbao granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)							
Xiong YH 2008	48	0.74 (0.09)	48	0.73 (0.13)		100.0 %	0.01 [-0.03, 0.05]
Subtotal (95% CI)	**48**		**48**			**100.0 %**	**0.01 [-0.03, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.44 (P = 0.66)							
44 Jiangu granule plus compound calcium amino acid chelate capsule versus placebo granule plus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)							
Xiong YH 2008	48	0.71 (0.1)	48	0.73 (0.13)		100.0 %	-0.02 [-0.07, 0.03]
Subtotal (95% CI)	**48**		**48**			**100.0 %**	**-0.02 [-0.07, 0.03]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.84 (P = 0.40)							
45 Xuduanzhuanggu capsule plus calcium tablet versus placebo plus calcium tablet (BMD of femoral neck, 6 months)							
Zhan HS 2009	360	0.71 (0.11)	120	0.7 (0.11)		100.0 %	0.01 [-0.01, 0.03]
Subtotal (95% CI)	**360**		**120**			**100.0 %**	**0.01 [-0.01, 0.03]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.86 (P = 0.39)							
46 Gusongbao granule plus calcium tablet versus placebo plus calcium tablet (BMD of femoral neck, 6 months)							
Zhan HS 2009	120	0.7 (0.11)	120	0.7 (0.11)		100.0 %	0.0 [-0.03, 0.03]
Subtotal (95% CI)	**120**		**120**			**100.0 %**	**0.0 [-0.03, 0.03]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.0 (P = 1.0)							
47 Yigu capsule plus calcium versus placebo plus calcium (BMD of femoral neck, 6 months)							
Zhang RH 2004	70	0.71 (0.08)	70	0.67 (0.11)		100.0 %	0.04 [0.01, 0.07]
Subtotal (95% CI)	**70**		**70**			**100.0 %**	**0.04 [0.01, 0.07]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.46 (P = 0.014)							
48 Migu tablet plus compound calcium amino acid chelate capsule versus compound calcium amino acid chelate capsule (BMD of femoral neck, 6 months)							
Dai Y 2007	54	0.8 (0.08)	53	0.56 (0.1)		100.0 %	0.24 [0.21, 0.27]
Subtotal (95% CI)	**54**		**53**			**100.0 %**	**0.24 [0.21, 0.27]**
Heterogeneity: not applicable							
Test for overall effect: Z = 13.69 (P < 0.00001)							
49 Antai capsule plus Caltrate versus Caltrate (BMD of Ward's, 6 months)							

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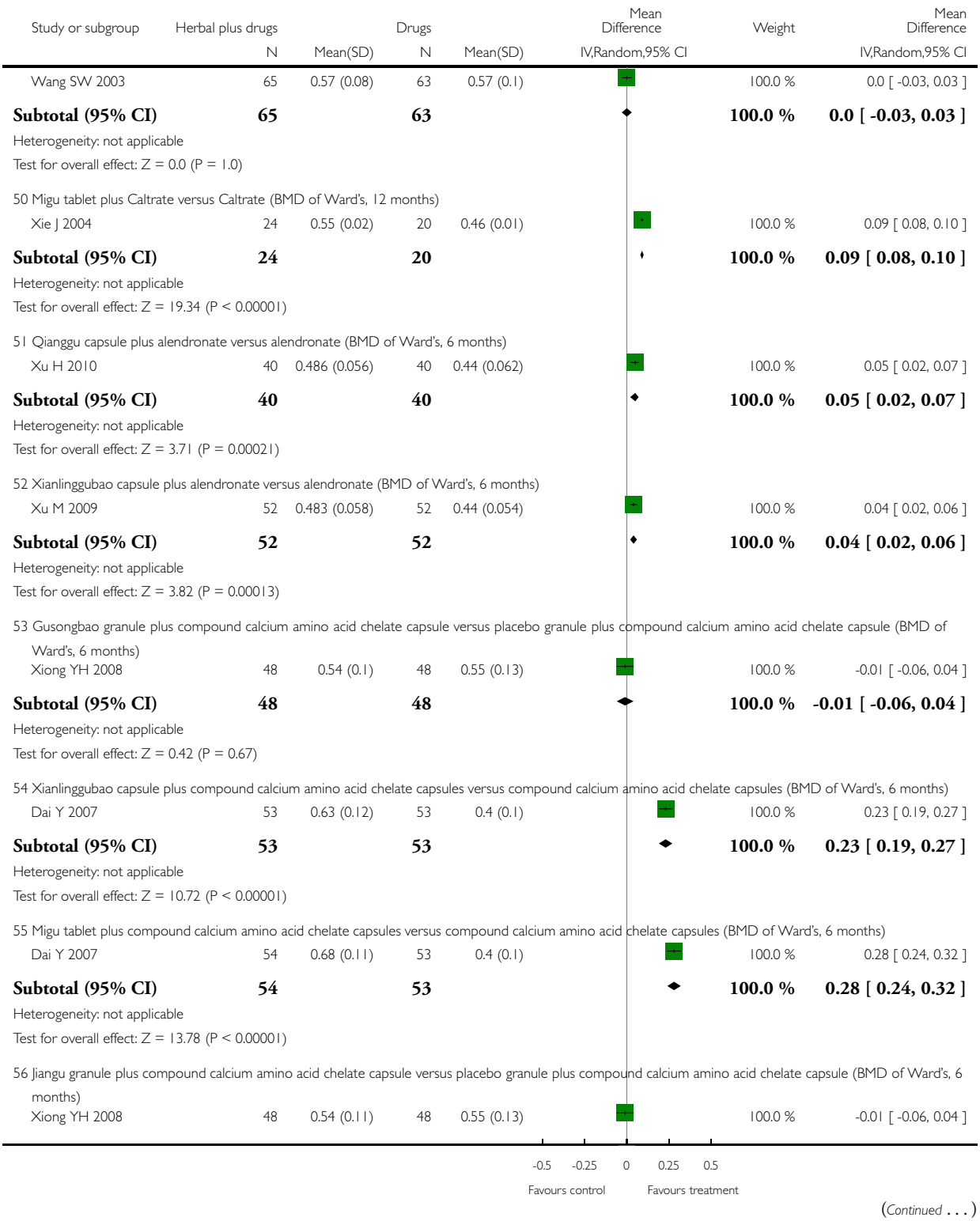

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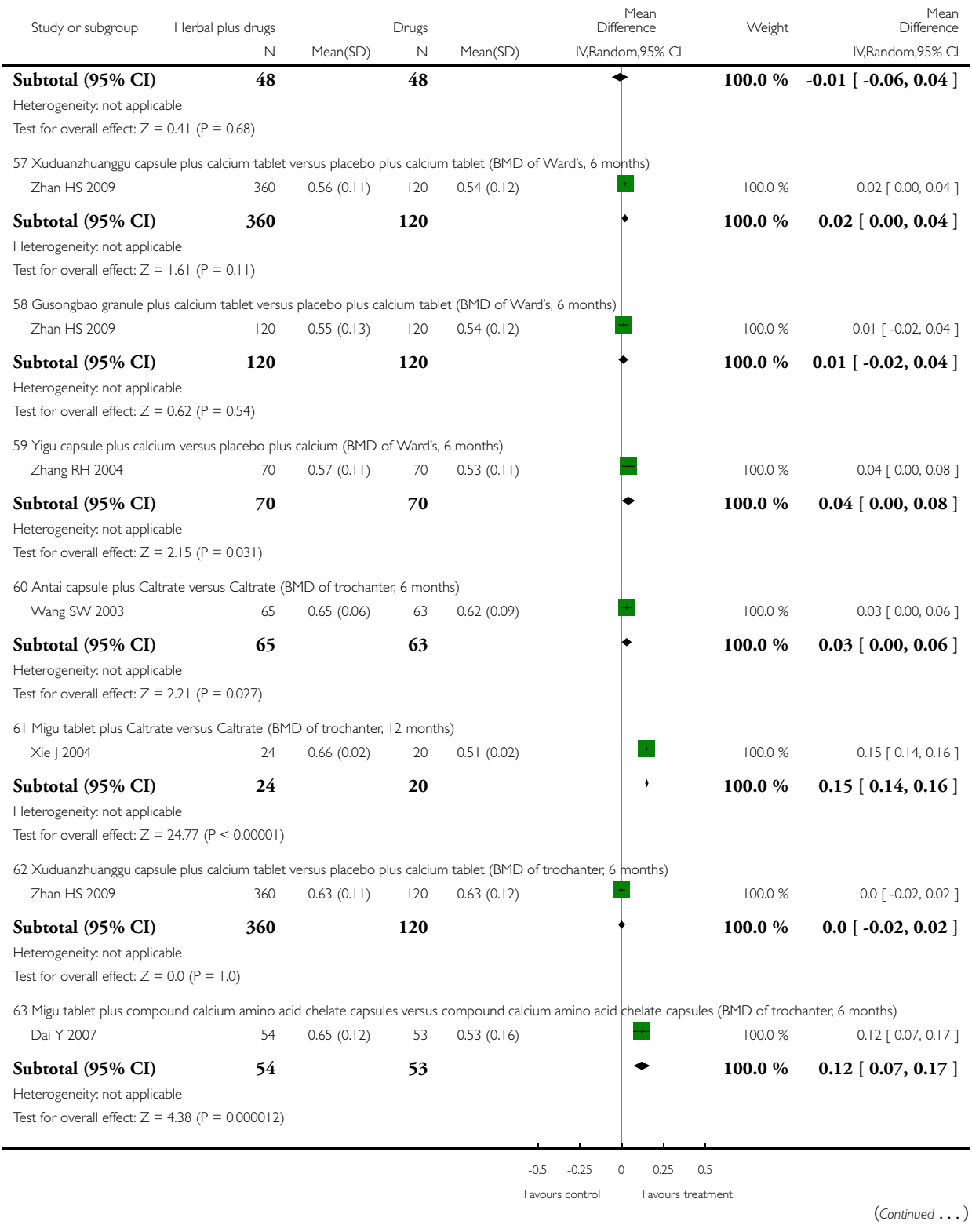

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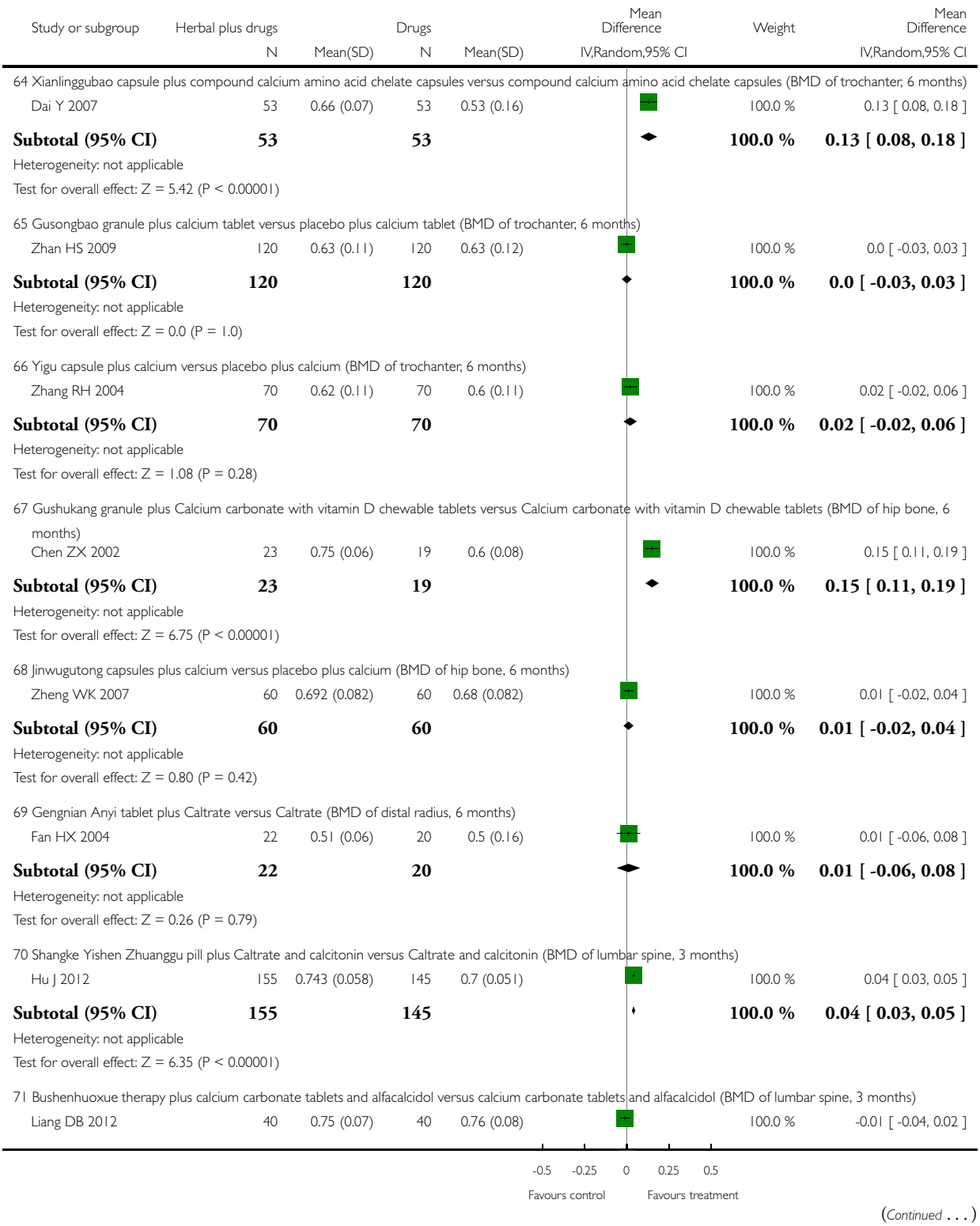

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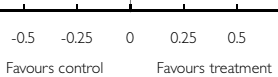
Study or subgroup	Herbal plus drugs N	Mean(SD)	Drugs N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Subtotal (95% CI)	**40**		**40**			**100.0 %**	**-0.01 [-0.04, 0.02]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.59 (P = 0.55)							
72 Gukang tablet plus oyster shell calcium chewable tablets and vitamin A and D capsules versus oyster shell calcium chewable tablets and vitamin A and D capsules (BMD of lumbar spine, for 3 months)							
Liu JM 2012	40	1.01 (0.24)	40	0.77 (0.21)		100.0 %	0.24 [0.14, 0.34]
Subtotal (95% CI)	**40**		**40**			**100.0 %**	**0.24 [0.14, 0.34]**
Heterogeneity: not applicable							
Test for overall effect: Z = 4.78 (P < 0.00001)							
73 Liuwei Dihuang pills plus Caltrate versus Caltrate (BMD of lumbar spine, 6 months)							
Ma C 2011	36	0.94 (0.07)	36	0.89 (0.04)		100.0 %	0.05 [0.02, 0.08]
Subtotal (95% CI)	**36**		**36**			**100.0 %**	**0.05 [0.02, 0.08]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.72 (P = 0.00020)							
74 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (BMD of lumbar spine,3 months)							
Ma CZ 2011	60	0.98 (0.087)	60	0.96 (0.081)		100.0 %	0.02 [-0.01, 0.05]
Subtotal (95% CI)	**60**		**60**			**100.0 %**	**0.02 [-0.01, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.30 (P = 0.19)							
75 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (BMD of femoral neck, 3 months)							
Ma CZ 2011	60	0.725 (0.051)	60	0.71 (0.05)		100.0 %	0.01 [-0.01, 0.03]
Subtotal (95% CI)	**60**		**60**			**100.0 %**	**0.01 [-0.01, 0.03]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.41 (P = 0.16)							
76 Yiyuanjiangu decoction plus calcitonin and calcium carbonate tablet versus calcitonin and calcium carbonate tablet (BMD of trochanter, 3 months)							
Ma CZ 2011	60	0.697 (0.046)	60	0.67 (0.043)		100.0 %	0.02 [0.01, 0.04]
Subtotal (95% CI)	**60**		**60**			**100.0 %**	**0.02 [0.01, 0.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.83 (P = 0.0047)							
77 Yishen Zhuanggu decoction plus calcitriol soft capsule versus calcitriol soft capsule (BMD of lumbar spine, 3 months)							
Ma YJ 2011	50	0.686 (0.064)	50	0.66 (0.063)		100.0 %	0.02 [0.00, 0.05]
Subtotal (95% CI)	**50**		**50**			**100.0 %**	**0.02 [0.00, 0.05]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.89 (P = 0.059)							
78 Hugu capsule plus Caltrate versus placebo capsule plus Caltrate (BMD of lumbar spine, 6 months)							
Wang XD 2011	61	0.8 (0.09)	61	0.77 (0.1)		100.0 %	0.03 [0.00, 0.06]
Subtotal (95% CI)	**61**		**61**			**100.0 %**	**0.03 [0.00, 0.06]**
Heterogeneity: not applicable							



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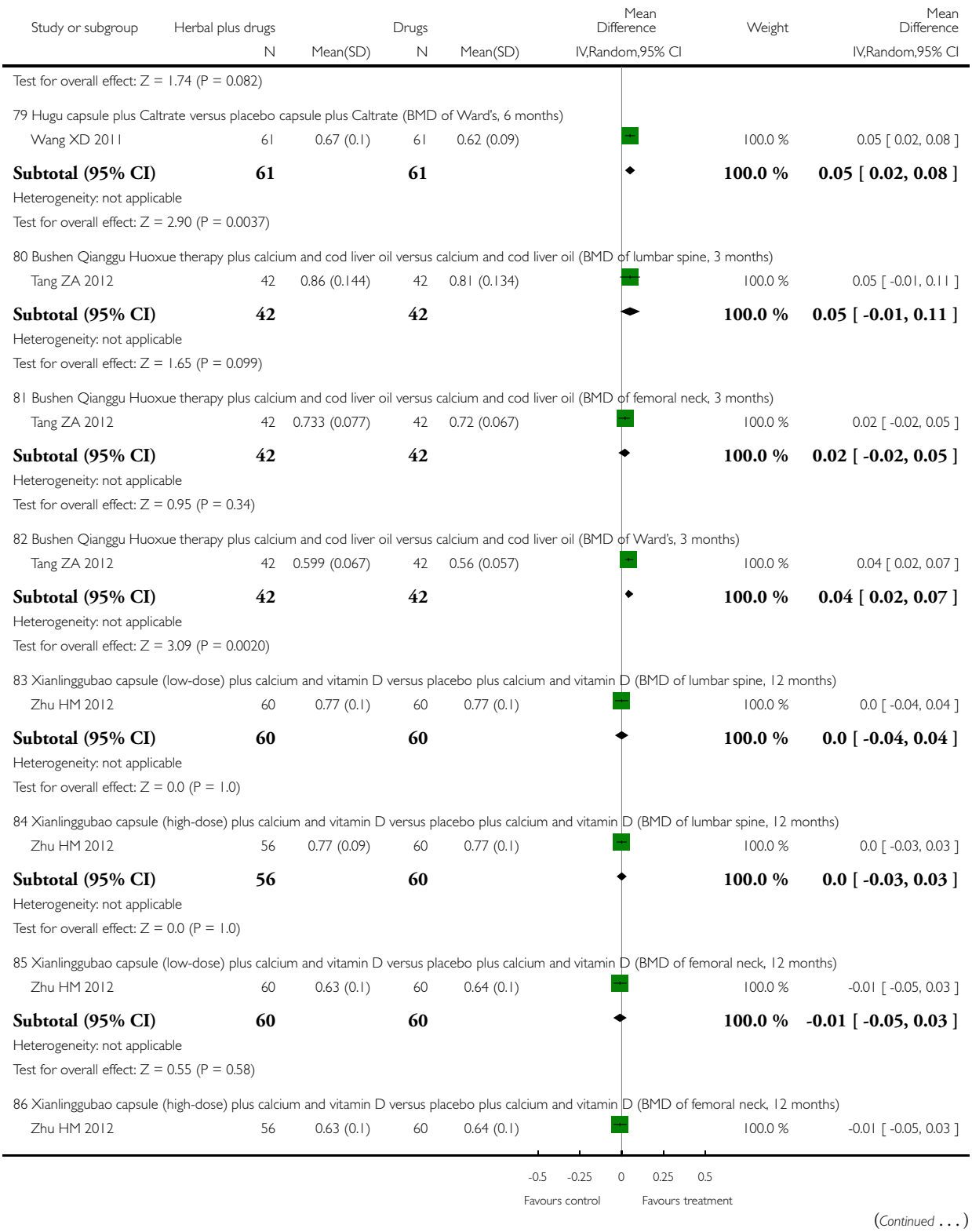

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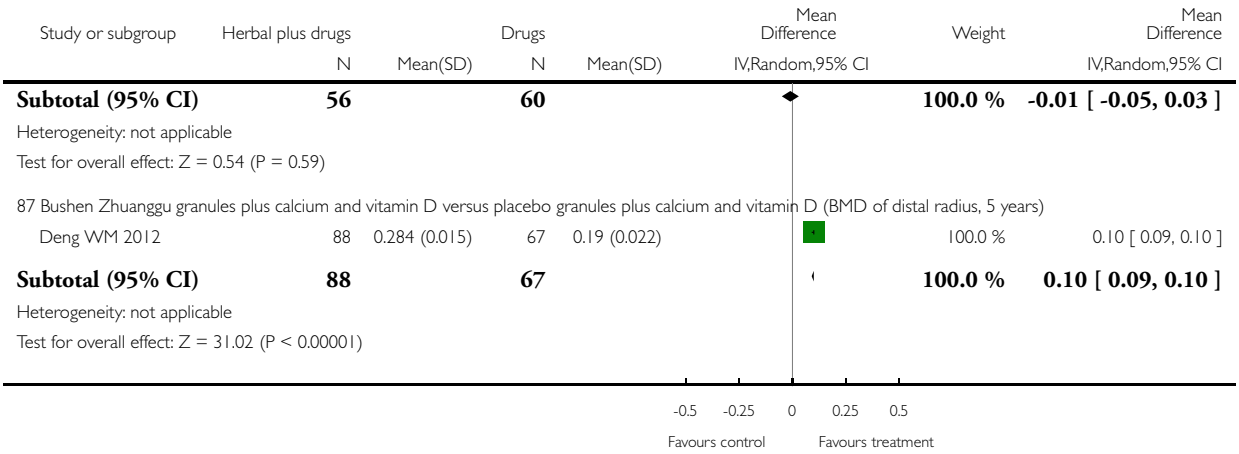
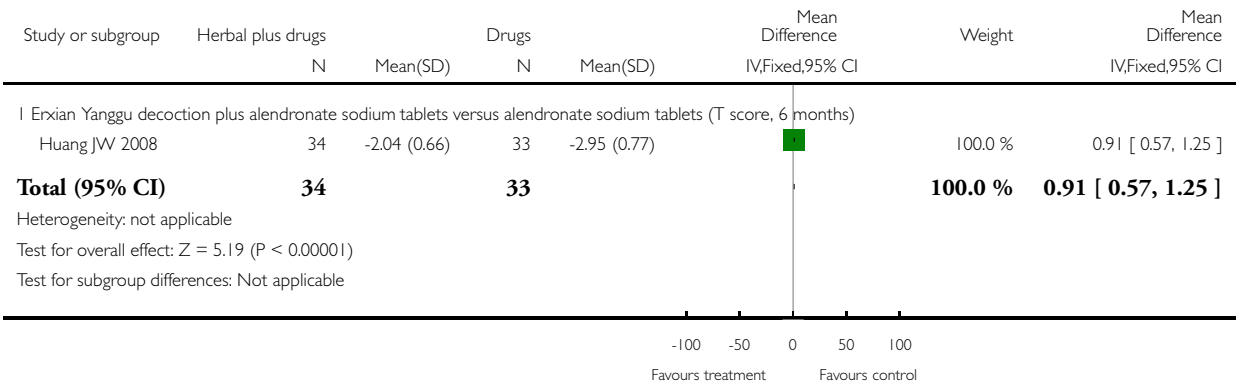


Analysis 4.3. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 3 T score in BMD measurement.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 3 T score in BMD measurement

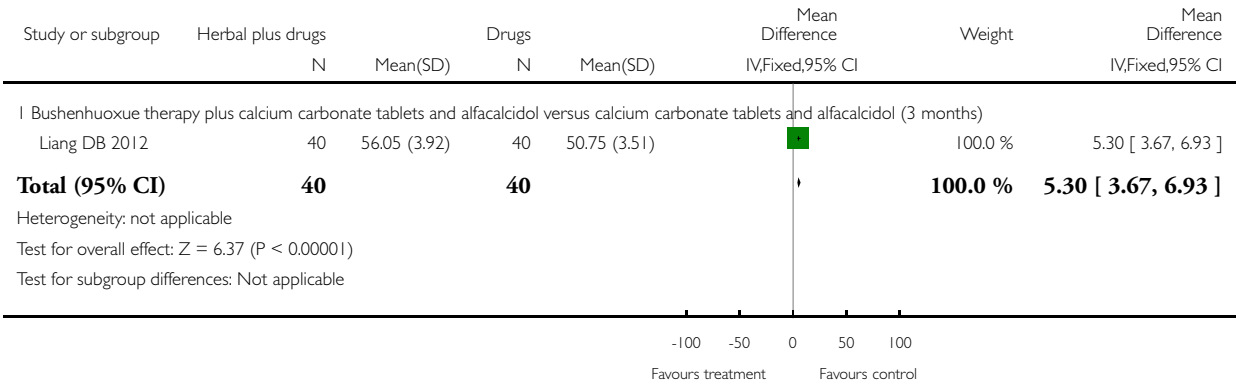


Analysis 4.4. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 4 Quality of life.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 4 Quality of life

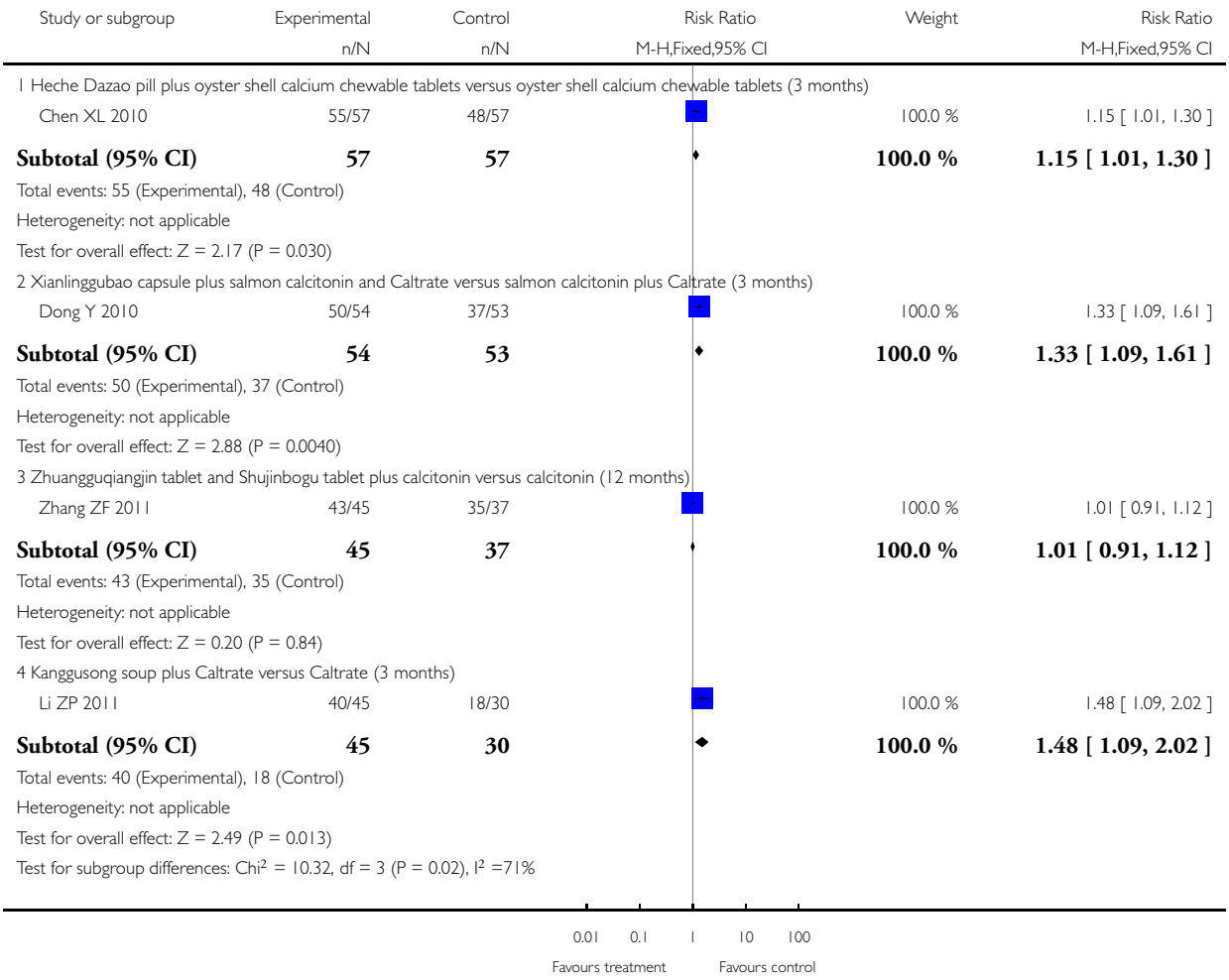


Analysis 4.5. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 5 Symptoms including pain, muscle fatigue and limited mobility.

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 5 Symptoms including pain, muscle fatigue and limited mobility

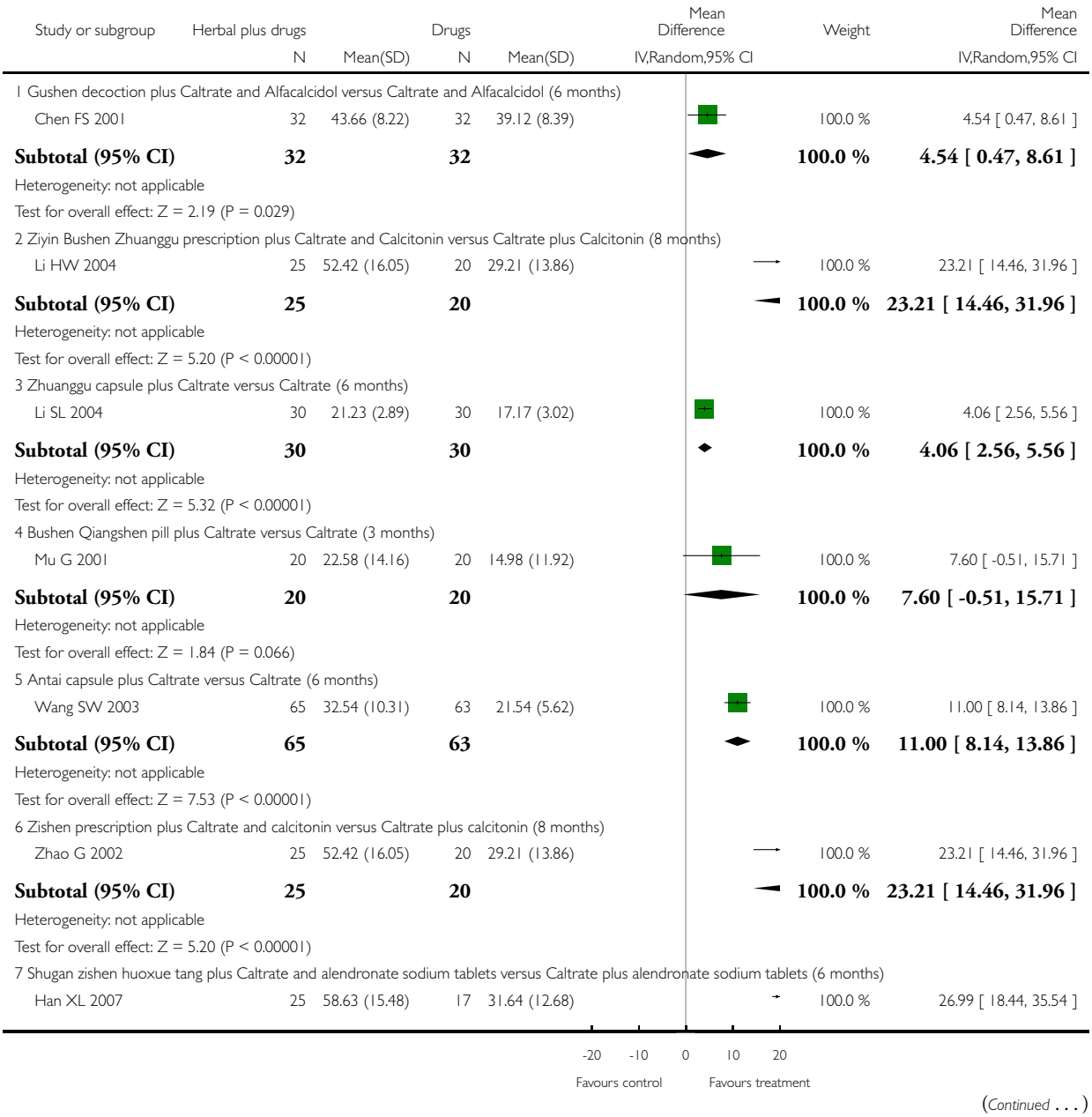


Analysis 4.6. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 6 Oestradiol (E2).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 6 Oestradiol (E2)



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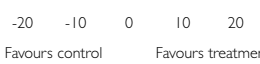
Study or subgroup	Herbal plus drugs N	Mean(SD)	Drugs N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Subtotal (95% CI)	**25**		**17**			**100.0 %**	**26.99 [18.44, 35.54]**
Heterogeneity: not applicable							
Test for overall effect: Z = 6.18 (P < 0.00001)							
8 Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate (48 weeks)							
Zhang XZ 2004	62	37.87 (4)	50	31.83 (3.68)		100.0 %	6.04 [4.61, 7.47]
Subtotal (95% CI)	**62**		**50**			**100.0 %**	**6.04 [4.61, 7.47]**
Heterogeneity: not applicable							
Test for overall effect: Z = 8.31 (P < 0.00001)							
9 Yigu capsule plus calcium versus placebo plus calcium (6 months)							
Zhang RH 2004	70	64.48 (30.51)	70	23.63 (4.96)		100.0 %	40.85 [33.61, 48.09]
Subtotal (95% CI)	**70**		**70**			**100.0 %**	**40.85 [33.61, 48.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 11.06 (P < 0.00001)							

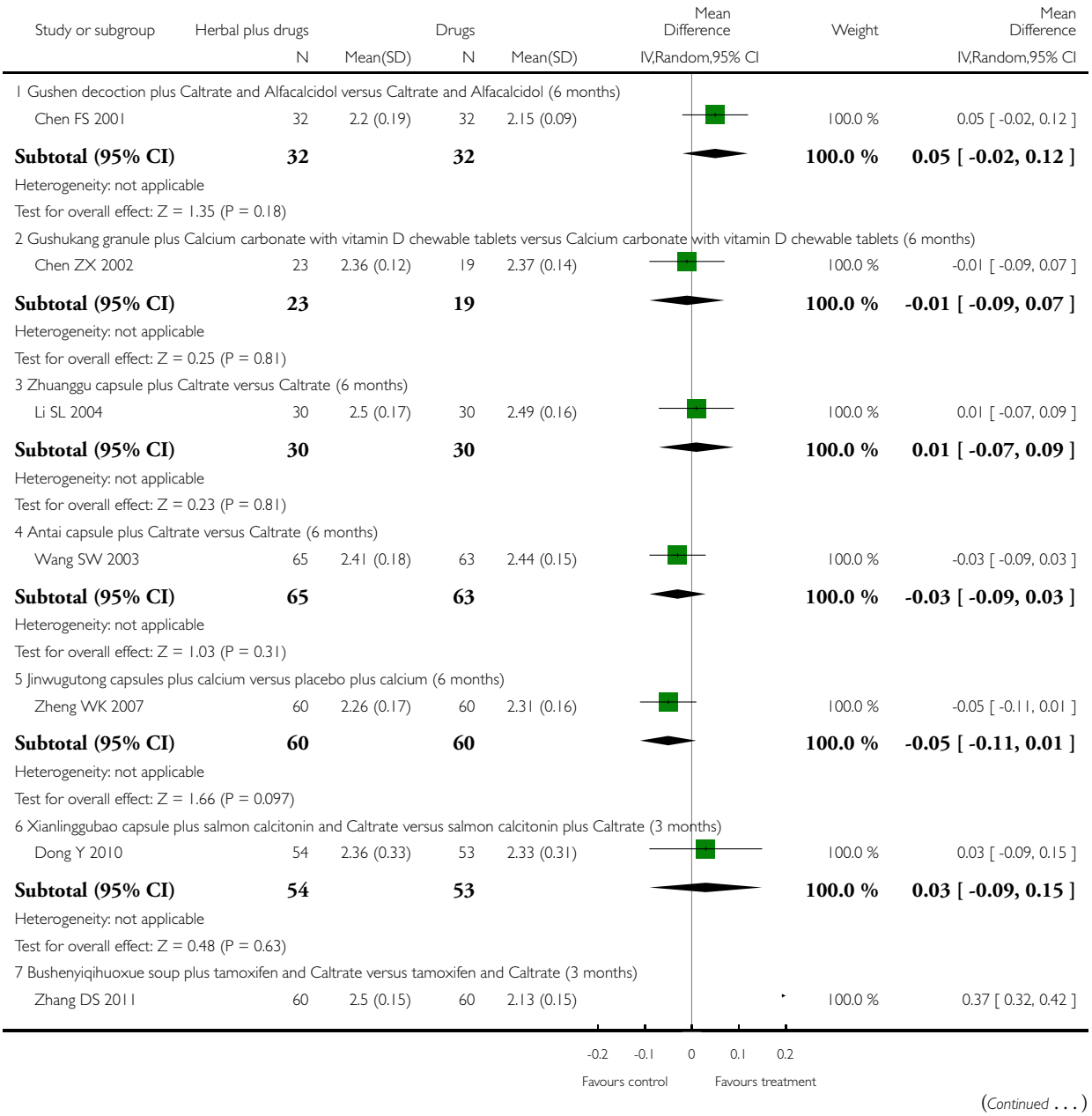


Analysis 4.7. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 7 Serum calcium (Ca).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 7 Serum calcium (Ca)



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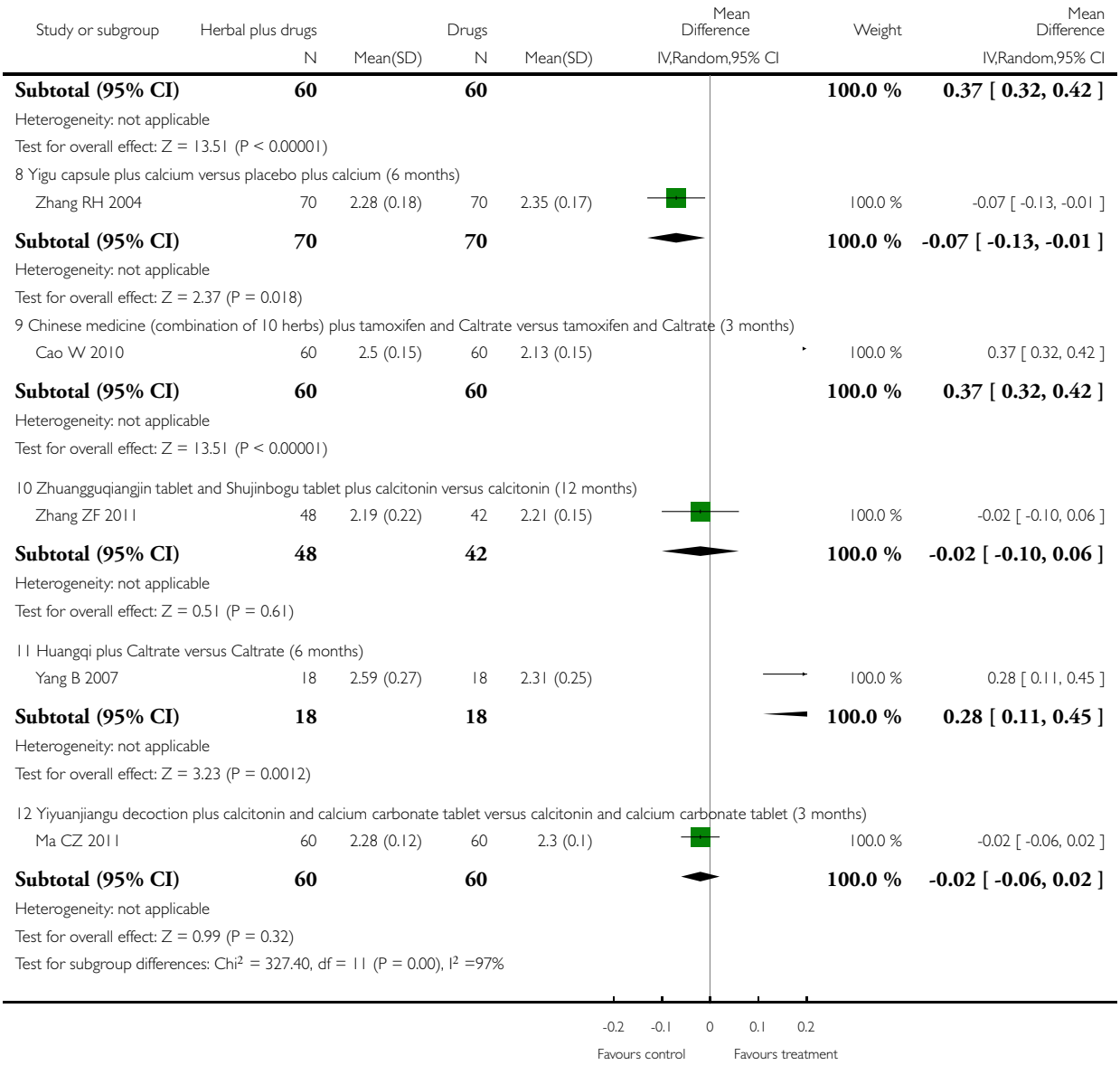
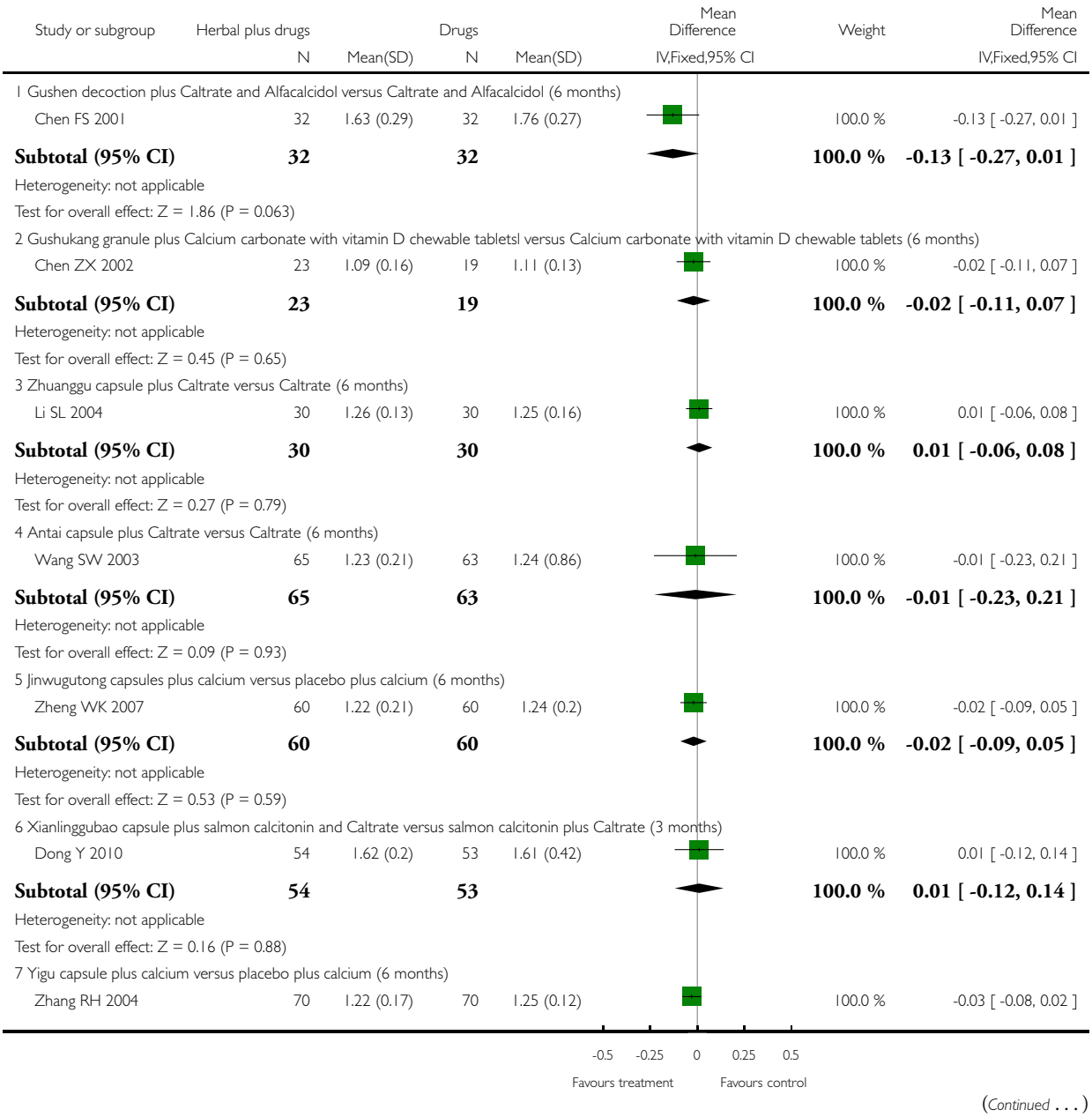


Analysis 4.8. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 8 Phosphorus (P).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 8 Phosphorus (P)



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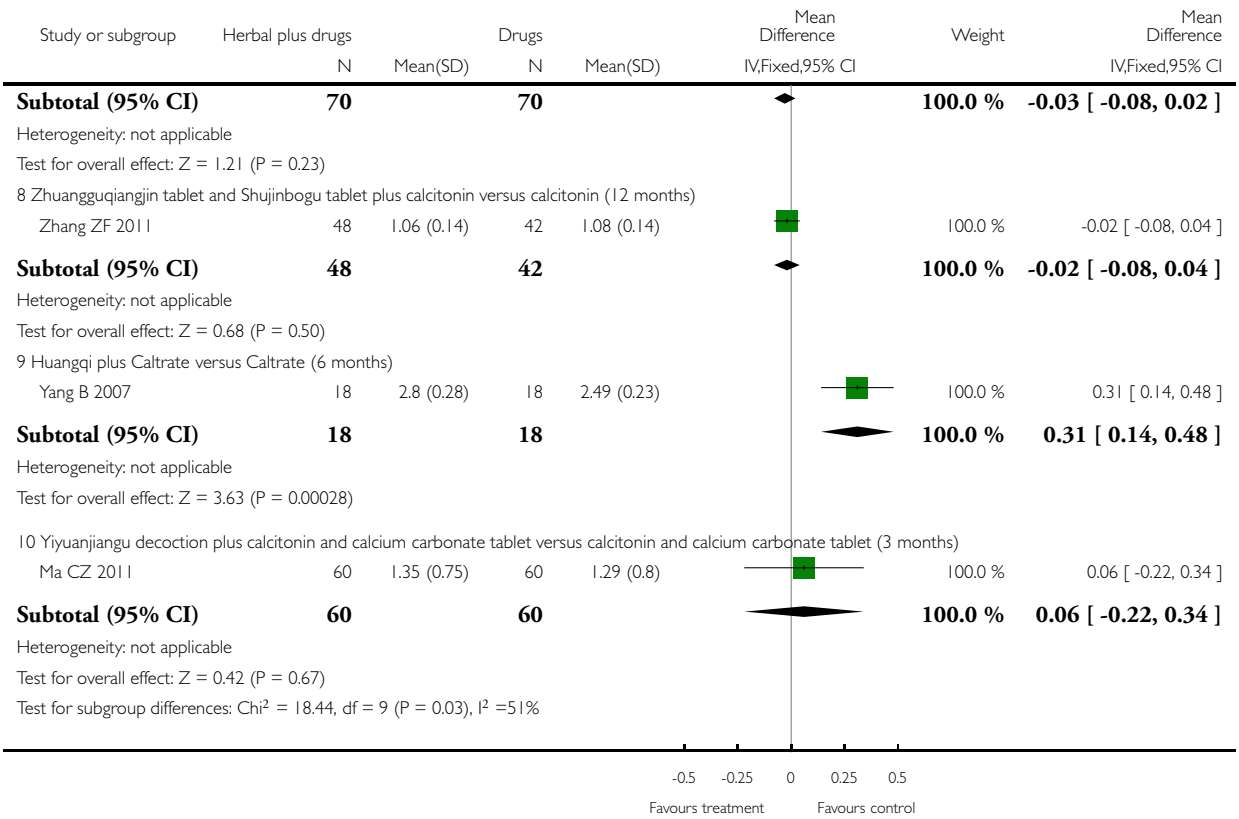
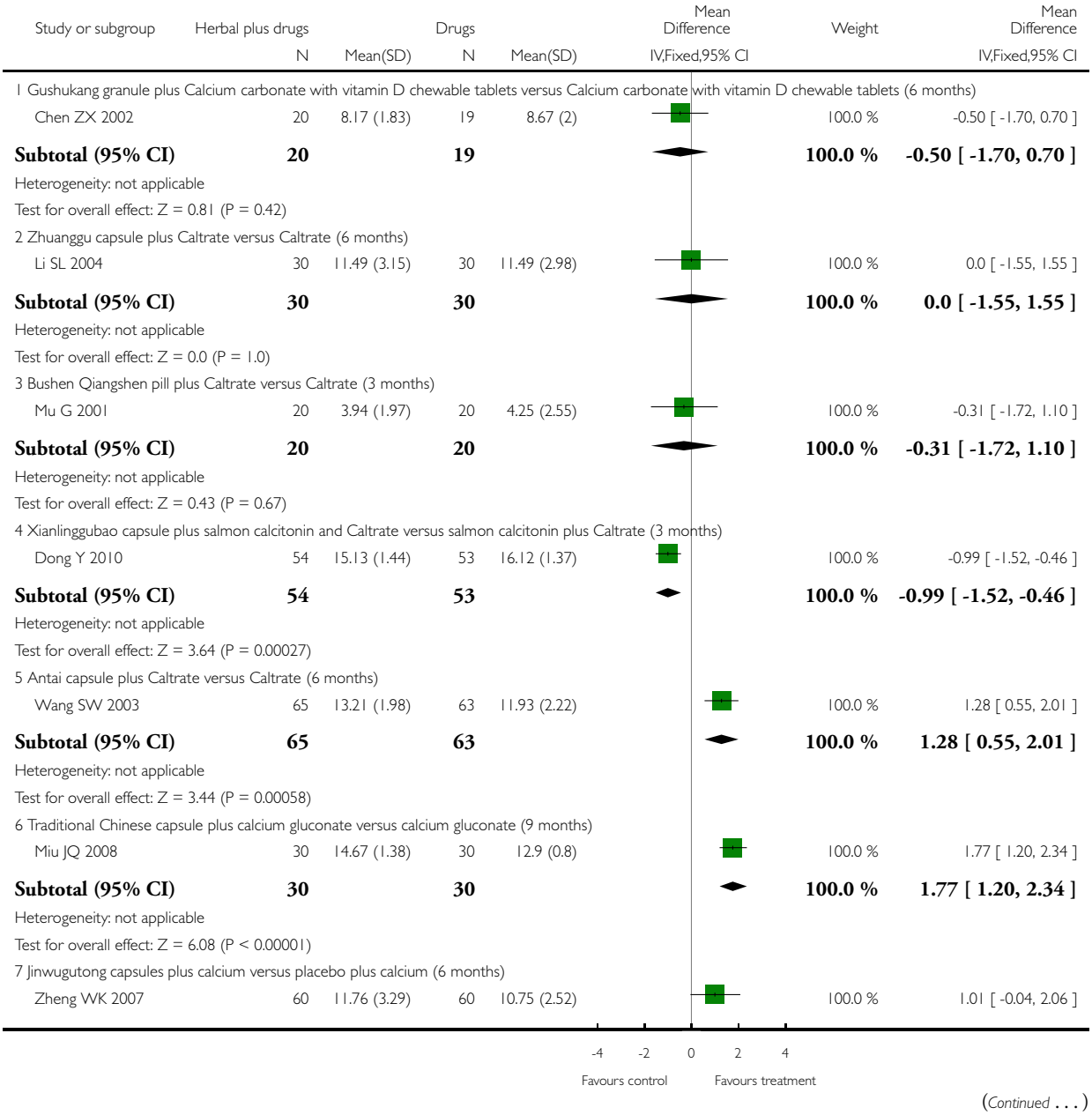


Analysis 4.9. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 9 Alkaline phosphatase (ALP).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 9 Alkaline phosphatase (ALP)



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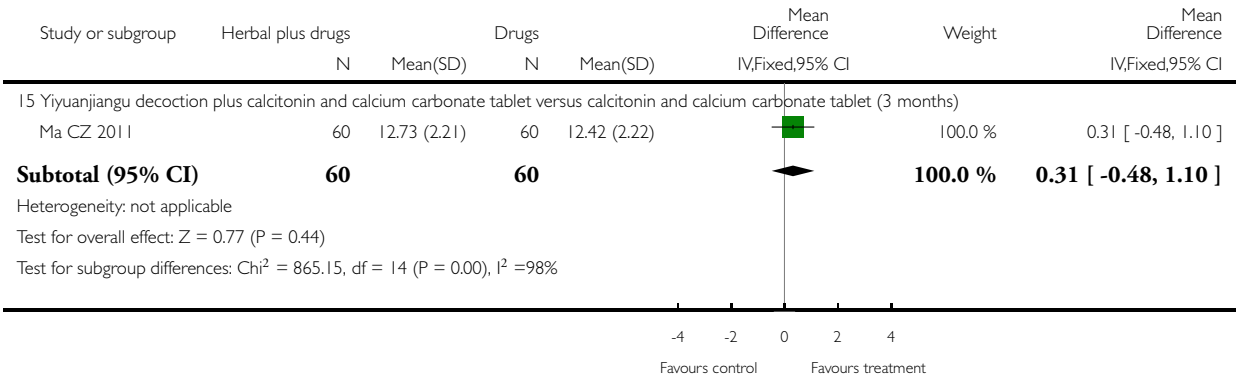
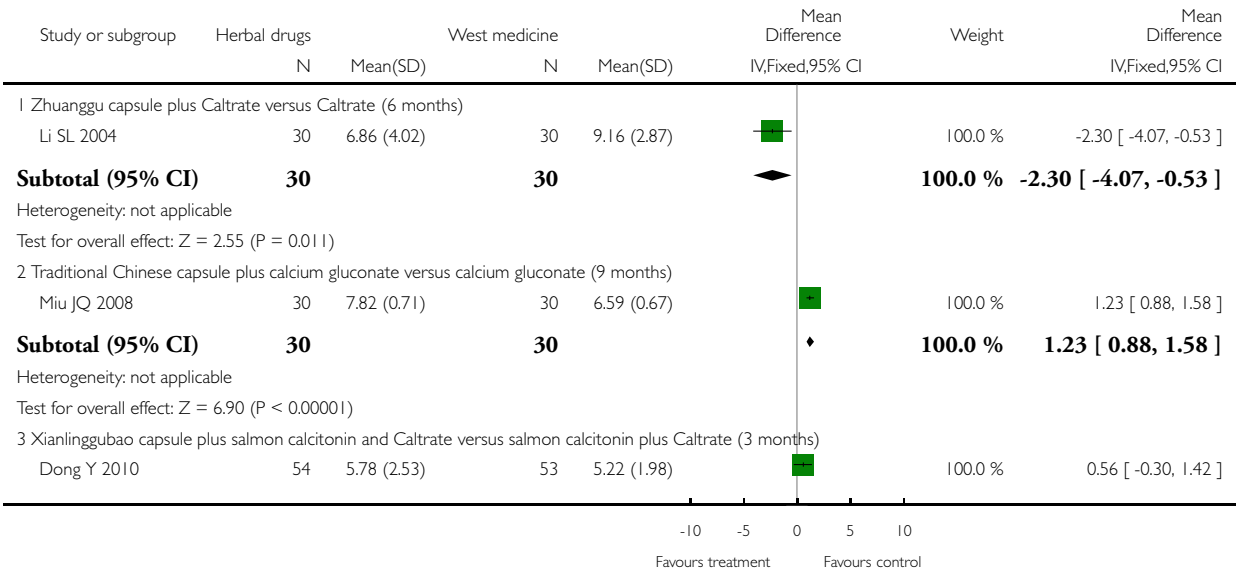


Analysis 4.10. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 10 Bone Gla protein (BGP).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 10 Bone Gla protein (BGP)



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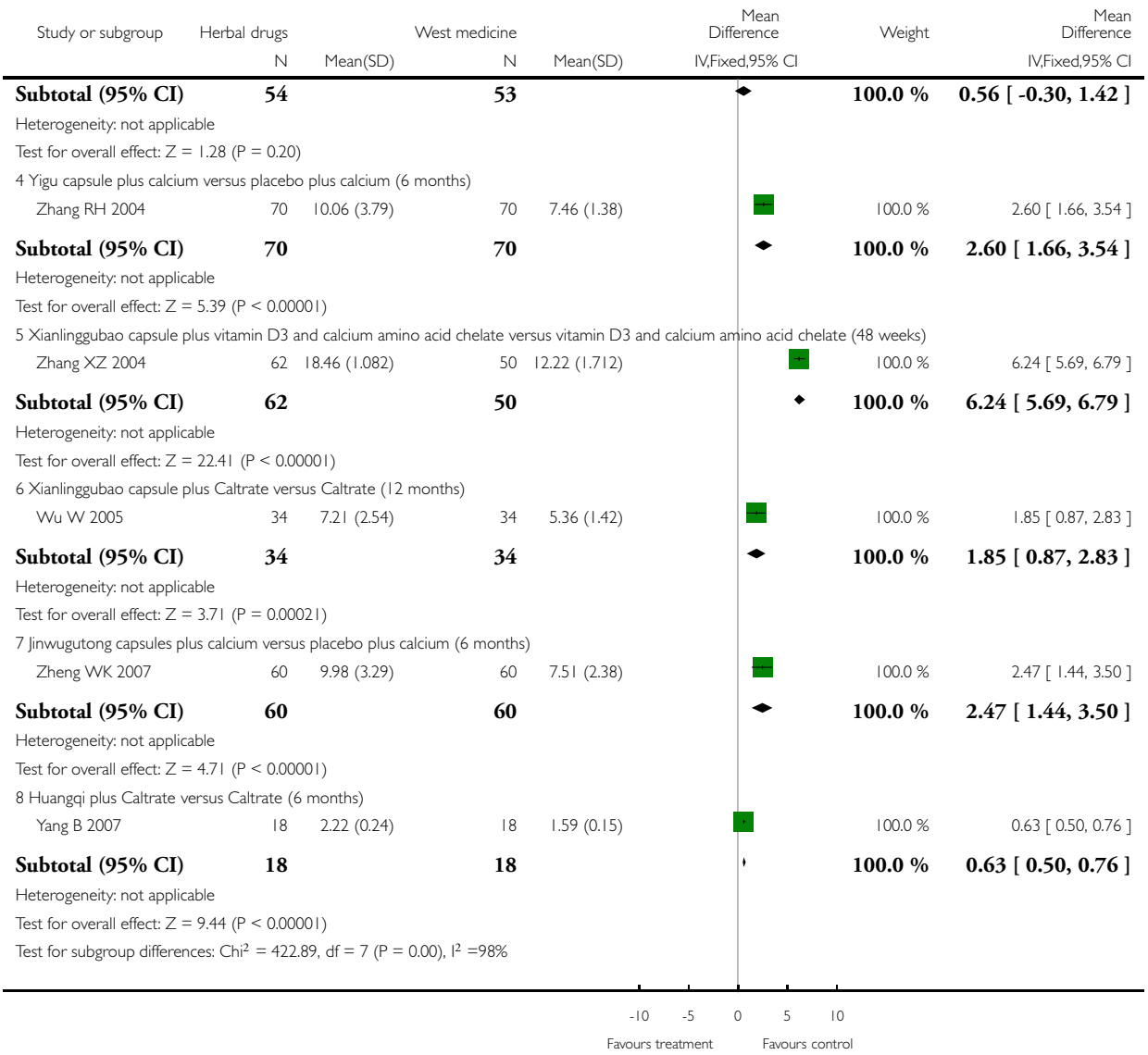
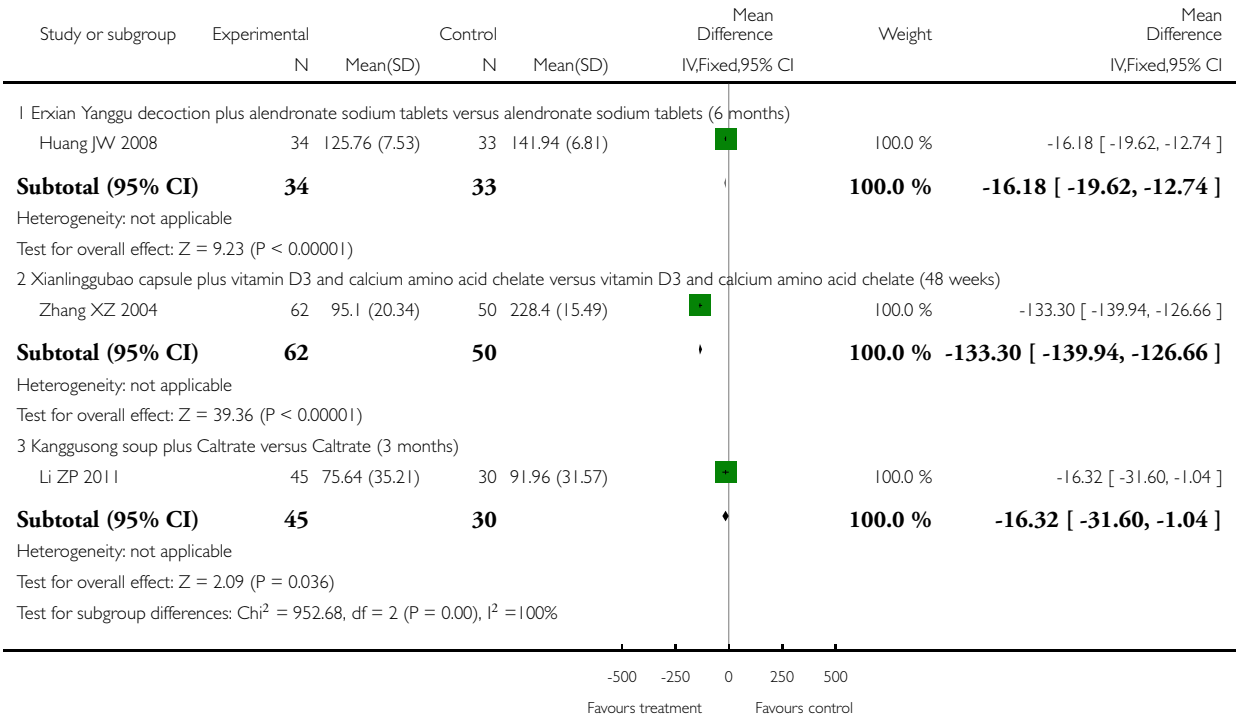


Analysis 4.11. Comparison 4 Chinese herbal medicines plus western medicine versus western medicine, Outcome 11 Interleukin-6 (IL-6).

Review: Chinese herbal medicines for treating osteoporosis

Comparison: 4 Chinese herbal medicines plus western medicine versus western medicine

Outcome: 11 Interleukin-6 (IL-6)



ADDITIONAL TABLES

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials

Name of herbs	Preparation	English names (Latin names) of the composition	Study ID
Kanggusong granule	Granule	Chinese herbal medicine manufactured by Hebei Handan pharmaceutical factory, which is composed of prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata), Dioscorea batatas (Rhizoma dioscoreae), Cuscuta seed (Semen	An SJ 2000; Wu MS 2001

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		cuscutae), Epimedium (Herba epimedii) , etc	
Bushenhuoxue recipe	Decoction	Herbal mixture composed of deer horn glue (Colla cornus cervi), prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata), Epimedium (Herba epimedii), Cuscuta seed (Semen cuscutae), Psoralea corylifolia (Fructus psoraleae), Eucommia bark (Cortex eucommiae), membranous milk vetch root (Radix astragali), Danshen root (Radix salviae miltiorrhizae), Rhizoma corydalis (Rhizoma corydalis), Fortune's drynaria rhizome (Rhizoma drynariae), Liquorice root (Radix glycyrrhizae), Frankincense (olibanum), Myrrh (Commiphora molmol), Dragon's bones (Os Draconis) and oyster shell (Concha ostreae)	Cao GY 2010
Chinese medicine (combinations of 10 herbs)	Decoction	Herbal mixture composed of Psoralea corylifolia (Fructus psoraleae), Fortune's drynaria rhizome (Rhizoma drynariae) , Glossy privet fruit (Fructus ligustri lucidi), Epimedium (Herba epimedii) , liquorice root (Radix glycyrrhizae) , Szechuan lovage rhizome (Rhizoma chuanxiong), Chinese angelica (Radix angelicae sinensis), Himalayan teasel root (Radix dipsaci), Ground beetle (Eupolyphaga seu steleophaga) and liquorice root (Radix glycyrrhizae)	Cao W 2010
Gushen decoction	Decoction	Herbal mixture composed of 6 herbs: Epimedium (Herba epimedii), King Solomon's seal rhizome (Rhizoma polygonati), Barbary wolfberry fruit (Fructus lycii), human placenta (Placenta hominis), Rehmanniae radix preparata and clematis root (Radix clematidis)	Chen FS 2001
Gukang oral liquid	Oral liquid	Herbal mixture manufactured by affiliated orthopedics hospital of Guangzhou Uni- versity of Traditional Chinese Medicine. It is a combined medicine composed of Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), liquorice root (Radix glycyrrhizae), Dan-	Chen JP 1999; Shao M 2003; Wang JM 2008

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		shen root (Radix salviae miltiorrhizae), etc	
Shenyao capsules	Capsule	Chinese patent herbal medicine composed of Red leaves to kidney (Trachelos permum jasminoides Lem. Var. heterophyllum Tsiang), White leaves to kidney (euonymus fortunei Hand. Mazz), Cotton kidney (Urena procumbens L), Litchi kidney (Agrimonia pilosa Ledeb Var japonica Nakai), Dragon buds kidney (Salvia substolonifera Stib), Fagopyrum esculentum kidney (Fagopyrum cymosum Meisn), etc	Chen NQ 2006
Gukang dection	Decoction	Herbal mixture composed of Epimedium (Herba epimedii), Psoralea corylifolia (Fructus psoraleae), Rehmanniae radix preparata, Danshen root (Radix salviae miltiorrhizae), desert-living cistanche (Herba cistanches), liquorice root (Radix glycyrrhizae), Chinese angelica (Radix angelicae sinensis), white peony root (Radix paeoniae alba), Cuscuta seed (Semen cuscutae), Chinese date (Fructus jujubae), etc	Chen X 2008
Heche Dazao pill	Decoction	Herbal mixture composed of human placenta (Placenta hominis), Rehmanniae radix preparata, Radix asparagi, Radix ophiopogonis (Radix ophiopogonis), Eucommia bark (Cortex eucommiae), two-tooth achyranthes root (Radix achyranthis bidentatae), Amur cork tree bark (Cortex phellodendri), tortoise shell (Carapax et plastrum testudinis), liquorice root (Radix glycyrrhizae) , Psoralea corylifolia (Fructus psoraleae), Dioscorea batatas (Rhizoma dioscoreae) and Wolfiporia cocos (Poria)	Chen XL 2010
Jiarong tablet	Tablet	Chinese patent herbal medicine manufactured by Xi'an Boai Medicine limited company	Chen YQ 2001
Gushukang granule	Granule	Chinese patent herbal medicine composed of Epimedium (Herba epimedii) , Rehmanniae radix preparata, liquorice	Chen ZX 2002; Wu MS 2007; Zhang YS 2003

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		root (Radix glycyrrhizae), Danshen root (Radix salviae miltiorrhizae), Fortune's drynaria rhizome (Rhizoma drynariae), etc	
Strong Bone capsule	Capsule	Herbal mixture composed of deer horn glue (Colla cornus cervi), desert-living cistanche (Herba cistanches), prepared rhizome of rehmannia (Radix rehmanniae preparata), tortoise shell (Carapax et plastrum testudinis), Eucommia bark (Cortex eucommiae), bitter orange (Fructus aurantii), Suberect spatholobus stem (Caulis spatholobi), etc	Cui TH 1999
Xianlinggubao capsule	Capsule	Chinese patent herbal medicine composed of Epimedium (Herba epimedii) , Himalayan teasel root (Radix dipsaci) , Psoralea corylifolia (Fructus psoraleae), etc.	Dai Y 2007; Dong Y 2010; Qiu ZX 2010; Wu W 2005; Xu M 2009; Zhang XZ 2004; Zhu HM 2012
Migu tablet	Tablet	The medicine was developed by Union Hospital of Tongji Medical College and composed of Epimedium (Herba epimedii), Eucommia bark (Cortex eucommiae), Psoralea corylifolia (Fructus psoraleae), etc	Dai Y 2007; Xie J 2004
Herba epimedii prescription	Decoction	Herbal mixture composed of Epimedium (Herba epimedii) , Psoralea corylifolia (Fructus psoraleae) , Eucommia bark (Cortex eucommiae), oyster shell (Concha ostreae), common monkshood mother root, processed radix aconiti (Radix aconiti preparata), Kusnezoff monkshood root (Radix aconiti kusnezoffii), Chinese angelica (Radix angelicae sinensis) and Szechuan lovage rhizome (Rhizoma chuanxiong)	Dong YF 2004
Gengnian Anyi tablet	Tablet	Chinese patent herbal medicine manufactured by Hubei traditional Chinese medicine company. The main composition was Rehmanniae radix preparata, Dioscorea batatas (Rhizoma dioscoreae) , Eucommia bark (Cortex eucommiae) , desert-living cistanche (Herba cistanches), etc	Fan HX 2004

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Gumiling granule	Granule	Self developed herbal mixture (no details on composition)	Gang PH 2001
Shengu capsule	Capsule	Chinese patent medicine manufactured by Beijing Tianjiu Medicine limited company. The main composition was oyster shell (Concha ostreae)	Gong L 2001
Yishen Zhuanggu mixture	Decoction	Chinese patented medicine manufactured by Beijing Xuanwu hospital. It is a combined medicine composed of Psoralea corylifolia (Fructus psoraleae) , Radix codonopsis pilosulae (Radix codonopsis), Fortune's drynaria rhizome (Rhizoma drynariae), Rehmanniae radix preparata, liquorice root (Radix glycyrrhizae), etc	Gong L 2001
Bushen Kangsong pill	Pill	Chinese patent medicine manufactured by the People's Liberation Army General Hospital of Nanjing Military Region. It is composed of Rehmanniae radix preparata, Chinese taxillus twig (Herba taxilli), Dioscorea batatas (Rhizoma dioscoreae), common macrocarpium fruit (Fructus corni), Barbary wolfberry fruit (Fructus lycii), hairy antler (Corn Cervi Pantotrichum), Himalayan teasel root (Radix dipsaci), Psoralea corylifolia (Fructus psoraleae) , Eucommia bark (Cortex eucommiae) , Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), two-tooth achyranthes root (Radix achyranthis bidentatae), Cuscuta seed (Semen cuscutae), cassia bark (Cortex cinnamomi), Chinese angelica (Radix angelicae sinensis), liquorice root (Radix glycyrrhizae), Dragon's bones (Os Draconis) , oyster shell (Concha ostreae), hawthorn fruit (Fructus crataegi), liquorice root (Radix glycyrrhizae), etc	Guo JH 2008
Shugan zishen huoxue tang	Decoction	Herbal mixture composed of Chinese thorowax root (Radix bupleuri), white peony root (Radix paeoniae alba), Nutgrass galingale rhizome (Rhizoma cyperi) , bitter orange (Fructus aurantii), Pinel-	Han XL 2007

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		lia tuber (Rhizoma pinelliae), Wolfiporia cocos (Poria), prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata), common macrocarpium fruit (Fructus corni), tortoise shell (Carapax et plastrum testudinis), East Asian tree fern rhizome (Rhizoma cibotii) , Fructus chaenomelis (Chaenomeles speciosa Nakai), prepared frankincense (olibanum), Myrrh preparata (Commiphora molmol) and Szechuan lovage rhizome (Rhizoma chuanxiong)	
Bushen Jianpi Huoxue recipe	Decoction	Herbal mixture composed of Psoralea corylifolia (Fructus psoraleae), Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), Rehmanniae radix preparata, white peony root (Radix paeoniae alba), liquorice root (Radix glycyrrhizae), Cuscuta seed (Semen cuscutae), Danshen root (Radix salviae miltiorrhizae), Chinese angelica (Radix angelicae sinensis) and Chinese date (Fructus jujubae)	He MT 2007
Jiawei Zhuangyao Jianshen tang	Decoction	Herbal mixture composed of East Asian tree fern rhizome (Rhizoma cibotii), Cherokee rose fruit (Fructus rosae laevigatae), Chinese taxillus twig (Herba taxilli), suberect spatholobus stem (Caulis spatholobi), Philippine flemingia root (Moghania philippinensis li.), beautiful millettia root (Millettia speciosa champ), Cuscuta seed (Semen cuscutae) , glossy privet fruit (Fructus ligustri lucidi), Rhizoma corydalis (Rhizoma corydalis), Chinese angelica (Radix angelicae sinensis), red peony root (Radix paeoniae rubra) and largehead atractylodes rhizome (Rhizoma atractylodis macrocephalae)	He N 2006
Bushen Yangxue tang	Decoction	Herbal mixture composed of medicinal In- dian mulberry root (Radix morindae officinalis), Epimedium (Herba epimedii) , Cherokee rose fruit (Fructus rosae laevigatae), Barbary wolfberry fruit (Fructus lycii), Chinese date (Fructus jujubae),	He XQ 2006; Zhan ML 2007

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		Chinese angelica (Radix angelicae sinensis), white peony root (Radix paeoniae alba) and tuber fleece flower root (Radix polygoni multiflori), etc	
Shangke Yishen Zhuanggu pill	Pill	Herbal mixture composed of Rehmanniae radix preparata, Chinese angelica (Radix angelicae sinensis), two-tooth achyranthes root (Radix achyranthis bidentatae), Sanqi (Radix notoginseng), Wolfiporia cocos (Poria), Danshen root (Radix salviae miltiorrhizae) , common macrocarpium fruit (Fructus corni), Szechuan lovage rhizome (Rhizoma chuanxiong), membranous milk vetch root (Radix astragali), etc	Hu J 2012
Erxian Yanggu tang	Decoction	Herbal mixture composed of medicinal Indian mulberry root (Radix morindae officinalis), common curculigo rhizome (Rhizoma curculiginis), Epimedium (Herba epimedii), Barbary wolfberry fruit (Fructus lycii), Eucommia bark (Cortex eucommiae), Fortune's drynaria rhizome (Rhizoma drynariae) , Amur cork tree bark (Cortex phellodendri), common anemarrhena rhizome (Rhizoma anemarrhenae), deer horn glue (Colla cornus cervi), tortoise shell glue (Colla carapacis et plastri testudinis), paniculate swallow wort root (Radix Cynanchi Paniculati), white peony root (Radix paeoniae alba), Chinese angelica (Radix angelicae sinensis) , Radix astragali preparata and bitter orange (Fructus aurantii)	Huang JW 2008
Zishen Gukang pill	Pill	Chinese patent medicine manufactured by the Traditional Chinese Medicine Hospital of Henan province pharmacy. It is composed of Epimedium (Herba epimedii), Chinese angelica (Radix angelicae sinensis), prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata), Psoralea corylifolia (Fructus psoraleae), common macrocarpium fruit (Fructus corni), two-tooth achyranthes root (Radix achyranthis bidentatae), etc	Huang ZJ 2008

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Shengsuiyin	Decoction	Herbal mixture composed of medicinal Indian mulberry root (Radix morindae officinalis), Chinese taxillus twig (Herba taxilli), Cuscuta seed (Semen cuscutae) , tortoise shell glue (Colla carapacis et plastri testudinis), Epimedium (Herba epimedii), common macrocarpium fruit (Fructus corni), Radix codonopsis pilosulae (Radix codonopsis), Dioscorea batatas (Rhizoma dioscoreae), Wolfiporia cocos (Poria) and glossy privet fruit (Fructus ligustri lucidi)	Jian QQ 2010
Guli powder	Powder	Chinese patent medicine manufactured by drug manufactory of the research institute of traditional Chinese medicine of Sichuan province. It is composed of Radix codonopsis pilosulae (Radix codonopsis), large head atractylodes rhizome (Rhizoma atractylodis macrocephalae), Wolfiporia cocos (Poria), Radix angelicae (Radix angelicae dahuricae), Epimedium (Herba epimedii), common cnidium fruit (Fructus cnidii), Psoralea fruits (Fructus psoraleae) , Rehmanniae radix preparata, two-tooth achyranthes root (Radix achyranthis bidentatae), etc	Lan ZX 2006
Jianshenfang granule	Granule	Chinese patent medicine manufactured by Guangzhou Yuexiu District Orthopedic Hospital. It is composed of Himalayan teasel root (Radix dipsaci), clematis root (Radix clematidis), Cherokee rose fruit (Fructus rosae laevigatae), East Asian tree fern rhizome (Rhizoma cibotii), Philippine flemingia root (Moghania philippinensis li.), two-tooth achyranthes root (Radix achyranthis bidentatae), etc	Li BL 2007
Ziyin Bushen Zhuanggu prescription	Decoction	Investigator-prescribed herbal mixture composed of Eucommia bark (Cortex eucommiae), Rehmanniae radix preparata, deer horn glue (Colla cornus cervi), liquorice root (Radix glycyrrhizae) , Chinese angelica (Radix angelicae sinensis), Rhizoma corydalis (Rhizoma corydalis), two-tooth achyranthes root	Li HW 2004

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		(Radix achyranthis bidentatae), Danshen root (Radix salviae miltiorrhizae), Psoralea corylifolia (Fructus psoraleae), Wolfiporia cocos (Poria), etc	
Zhuanggu capsule	Capsule	Herbal mixture composed of Epimedium (Herba epimedii) , common cnidium fruit (Fructus cnidii), human placenta (Placenta hominis), liquorice root (Radix glycyrrhizae), Sanqi (Radix notoginseng), etc	Li SL 2004
Jingujian granule	Granule	Chinese patent medicine manufactured by Xiyuan Hospital of Chinese Academy of Traditional Chinese Medicine pharmacy. It is composed of Fortune's drynaria rhizome (Rhizoma drynariae), Eucommia bark (Cortex eucommiae), Szechuan lovage rhizome (Rhizoma chuanxiong), large head atractylodes rhizome (Rhizoma atractylodis macrocephalae), Manchurian wild ginger (Herba asari), etc	Li YH 2008
Jingujian granule (1,2,3)	Granule	Jingujian granule 1: Rehmanniae radix preparata, common macrocarpium fruit (Fructus corni), Cuscuta seed (Semen cuscutae), tortoise shell (Carapax et plastrum testudinis), two-tooth achyranthes root (Radix achyranthis bidentatae), Fortune's drynaria rhizome (Rhizoma drynariae), Eucommia bark (Cortex eucommiae), etc. Jingujian granule 2: Psoralea corylifolia (Fructus psoraleae), Eucommia bark (Cortex eucommiae), two-tooth achyranthes root (Radix achyranthis bidentatae), Radix codonopsis pilosulae (Radix codonopsis), large-head atractylodes rhizome (Rhizoma atractylodis macrocephalae), etc. Jingujian granule 3: Eucommia bark (Cortex eucommiae), Fortune's drynaria rhizome (Rhizoma drynariae), Medicinal cyathula root (Radix cyathulae), two-tooth achyranthes root (Radix achyranthis bidentatae), Manchurian wild ginger (Herba asari), large-head atracty-	Li YH 2010

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		lodes rhizome (Rhizoma atractylodis macrocephalae), Szechuan lovage rhizome (Rhizoma chuanxiong)	
Kanggusong soup	Decoction	Herbal mixture composed of Rehmanniae radix preparata 18 g, Barbary wolfberry fruit (Fructus lycii) 9 g, Epimedium (Herba epimedii) 18 g, Himalayan teasel root (Radix dipsaci) 9 g, membranous milk vetch root (Radix astragali) 9 g, Wolfiporia cocos (Poria) 9 g, Danshen root (Radix salviae miltiorrhizae) 18 g, Radix puerariae (Radix puerariae) 9 g, suberect spatholobus stem (Caulis spatholobi) 18 g, etc	Li ZP 2011
Xianling Gusong capsule	Capsule	The capsule included Epimedium (Herba epimedii) , common curculigo rhizome (Rhizoma curculiginis), medicinal Indian mulberry root (Radix morindae officinalis), ginseng (Radix ginseng), Chinese angelica (Radix angelicae sinensis), human placenta (Placenta hominis) and common anemarrhena rhizome (Rhizoma anemarrhenae)	Li ZY 2006
Bushenhuoxue therapy	Decoction	Herbal mixture composed of Rehmanniae radix preparata 24 g, Epimedium (Herba epimedii) 18 g, membranous milk vetch root (Radix astragali) 15 g, common macrocarpium fruit (Fructus corni) 12 g, Dioscorea batatas (Rhizoma dioscoreae) 12 g, Eucommia bark (Cortex eucommiae) 12g, Danshen root (Radix salviae miltiorrhizae) 12 g, tree peony bark (Cortex moutan) 9 g, Wolfiporia cocos (Poria) 9 g, oriental water plantain rhizome (Rhizoma alismatis) 9 g, safflower (Flos carthami) 9 g, Sanqi (Radix notoginseng) 3 g	Liang DB 2012
Bushen Shengsui principle	Decoction	Investigator-prescribed herbal mixture composed of Psoralea corylifolia (Fructus psoraleae), Epimedium (Herba epimedii), Eucommia bark (Cortex eucommiae) and glossy privet fruit (Fructus ligustri lucidi)	Liao L 2004

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Migu decoction	Decoction	Self developed herbal mixture (no details on composition)	Lin W 2000
Bushen Zhuanggu tang	Decoction	Herbal mixture composed of East Asian tree fern rhizome (Rhizoma cibotii), Himalayan teasel root (Radix dipsaci), medicinal Indian mulberry root (Radix morindae officinalis), Epimedium (Herba epimedii), Psoralea corylifolia (Fructus psoraleae), liquorice root (Radix glycyrrhizae), white peony root (Radix paeoniae alba), Chinese angelica (Radix angelicae sinensis), Szechuan lovage rhizome (Rhizoma chuanxiong), safflower (Flos carthami) and two-tooth achyranthes root (Radix achyranthis bidentatae)	Ling JY 2008
Gukang tablet	Tablet	Chinese patent medicine manufactured by Laiyang biological chemical pharmaceutical factory. It is composed of Rehmanniae radix preparata, Epimedium (Herba epimedii), suberect spatholobus stem (Caulis spatholobi), Chinese Pyrola Herb (Herba Pyrolae), Eucommia bark (Cortex eucommiae), medicinal Indian mulberry root (Radix morindae officinalis), common curculigo rhizome (Rhizoma curculiginis), desert-living cistanche (Herba cistanches), two-tooth achyranthes root (Radix achyranthis bidentatae), Chinese angelica (Radix angelicae sinensis), safflower (Flos carthami), etc	Liu JM 2012
Jiawei Bushen Zhuangjintang	Decoction	Investigator-prescribed herbal formulation composed of Rehmanniae radix preparata, Chinese angelica (Radix angelicae sinensis), two-tooth achyranthes root (Radix achyranthis bidentatae), Asiatic cornelian cherry fruit (Fructus corni), Wolfiporia cocos (Poria), Himalayan teasel root (Radix dipsaci), Eucommia bark (Cortex eucommiae), white peony root (Radix paeoniae alba), green tangerine peel (Pericarpium citri reticulatae viride), Slenderstyle acanthopanax bark (Cortex acanthopanacis), hairy antler (Corn Cervi Pantotrichum), etc	Lv ZH 2002

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Yiyuanjiangu decoction	Decoction	Herbal mixture composed of Rehmanniae radix preparata 15 g, Psoralea corylifolia (Fructus psoraleae) 15 g, Epimedium (Herba epimedii) 10 g, Radix angelicae pubescentis 10 g, Barbary wolfberry fruit (Fructus lycii) 10 g, East Asian tree fern rhizome (Rhizoma cibotii) 10 g, Chinese angelica (Radix angelicae sinensis) 10 g, membranous milk vetch root (Radix astragali) 20 g, two-tooth achyranthes root (Radix achyranthis bidentatae) 20 g, Chinese taxillus twig (Herba taxilli) 20 g, Himalayan teasel root (Radix dipsaci) 12 g, etc	Ma CZ 2011
Yishen Zhuanggu decoction	Decoction	Herbal mixture composed of Rehmanniae radix preparata 24 g, Fortune's drynaria rhizome (Rhizoma drynariae) 20g, Himalayan teasel root (Radix dipsaci) 20 g, Epimedium (Herba epimedii) 30 g, Chinese angelica (Radix angelicae sinensis) 15 g, white peony root (Radix paeoniae alba) 10 g, Eucommia bark (Cortex eucommiae) 20 g, Chinese taxillus twig (Herba taxilli) 30g, membranous milk vetch root (Radix astragali) 30g, Dioscorea batatas (Rhizoma dioscoreae) 2 0g, tuber fleece flower root (Radix polygoni multiflori) 20 g and Cuscuta seed (Semen cuscutae) 15 g	Ma YJ 2011
Bushen Jianpi Jingu decoction	Decoction	Herbal mixture composed of Rehmanniae radix preparata 20 g, Dioscorea batatas (Rhizoma dioscoreae) 15 g, common macrocarpium fruit (Fructus corni) 12 g, Barbary wolfberry fruit (Fructus lycii) 12 g, Eucommia bark (Cortex eucommiae) 15 g, Psoralea corylifolia (Fructus psoraleae) 15 g, Fortune's drynaria rhizome (Rhizoma drynariae) 15 g, Radix codonopsis pilosulae (Radix codonopsis) 20 g, membranous milk vetch root (Radix astragali) 20 g, large-head atractylodes rhizome (Rhizoma atractylodis macrocephalae) 10 g, Wolfiporia cocos (Poria) 10 g and liquorice root (Radix glycyrrhizae) 10 g	Mao YF 2011

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Gujian capsule	Capsule	Developed by Xiyuan hospital of China academy of TCM (no details on composition)	Meng XD 2003
Traditional Chinese capsule	Capsule	The capsule included Epimedium (Herba epimedii), Fortune's drynaria rhizome (Rhizoma drynariae), liquorice root (Radix glycyrrhizae), King Solomon's seal rhizome (Rhizoma polygonati), Radix puerariae (Radix puerariae) , Rhizoma corydalis (Rhizoma corydalis) , etc	Miu JQ 2008
Bushen Qiangshen pill	Pill	Chinese patented medicine composed of ginseng (Radix ginseng), hairy antler (Cornu cervi pantotrichum), desert-living cistanche (Herba cistanches), liquorice root (Radix glycyrrhizae), Barbary wolfberry fruit (Fructus lycii), etc	Mu G 2001; Mu G 2001a
Radix rehmanniae preparata and Radix astragali	Decoction	Herbal mixture composed of Rehmanniae radix preparata 30 g, membranous milk vetch root (Radix astragali) 30 g, etc	Ou L 2011
Qianggu soft extract	Slurry	Herbal mixture composed of medicinal Indian mulberry root (Radix morindae officinalis), Cuscuta seed (Semen cuscutae), liquorice root (Radix glycyrrhizae), Chinese angelica (Radix angelicae sinensis), etc	Peng T 2002
Bushen Qianggutang	Decoction	Investigator-prescribed formula composed of Himalayan teasel root (Radix dipsaci), Cuscuta seed (Semen cuscutae) , Psoralea corylifolia (Fructus psoraleae) , Fortune's drynaria rhizome (Rhizoma drynariae), common macrocarpium fruit (Fructus corni), Barbary wolfberry fruit (Fructus lycii), glossy privet fruit (Fructus ligustri lucidi), Dioscorea batatas (Rhizoma dioscoreae), Wolfiporia cocos (Poria), etc	Qi ZX 1998
Yanghuo Sanzi tang	Decoction	Herbal mixture composed of Epimedium (Herba epimedii) , Fructus Schisandrae (Fructus schisandrae chinensis), common macrocarpium fruit (Fructus corni), Psoralea corylifolia (Fructus psoraleae), mulberry fruit	Qiu RB 2004

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		(Fructus mori), Barbary wolfberry fruit (Fructus lycii), oyster shell (Concha ostreae), prepared fleece flower root (Radix polygoni multiflori preparata) and red ginseng (Radix ginseng rubra)	
Jiangu recipe	Decoction	Herbal mixture composed of Epimedium (Herba epimedii), medicinal Indian mulberry root (Radix morindae officinalis), common cnidium fruit (Fructus cnidii), liquorice root (Radix glycyrrhizae), Fortune's drynaria rhizome (Rhizoma drynariae), deer horn glue (Colla cornus cervi), hawthorn fruit (Fructus crataegi) , common macrocarpium fruit (Fructus corni) and Psoralea corylifolia (Fructus psoraleae)	Qiu RB 2008
Qianggu capsule	Capsule	Chinese patent medicine manufactured by Beijing Qihuang Pharmaceutical Limited Company; the main composition was Fortune's drynaria rhizome (Rhizoma drynariae)	Ruan XY 2006; Wang J 2007; Xu H 2010
Kangshu Jiangu granule	Granule	Chinese patent medicine manufactured by Shanxi college of traditional Chinese medicine pharmaceutical factory. It is composed of Epimedium (Herba epimedii) 20 g, Eucommia bark (Cortex eucommiae) 15 g, two-tooth achyranthes root (Radix achyranthis bidentatae) 15 g, Danshen root (Radix salviae miltiorrhizae) 15 g, large-head atractylodes rhizome (Rhizoma atractylodis macrocephalae) 12 g, etc	Shi CD 2012
Kidney-tonifying herbs	Granule	Herbal mixture composed of Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), Psoralea corylifolia (Fructus psoraleae), tuber fleece flower root (Radix polygoni multiflori), Chinese angelica (Radix angelicae sinensis), safflower (Flos carthami), common aucklandia root (Radix aucklandiae), etc	Song XW 2000

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Bushen Qianggu Huoxue therapy	Decoction	Herbal mixture composed of Psoralea corylifolia (Fructus psoraleae) 15 g, Fortune's drynaria rhizome (Rhizoma drynariae) 10 g, Eucommia bark (Cortex eucommiae) 15 g, Epimedium (Herba epimedii) 10 g, Barbary wolfberry fruit (Fructus lycii) 15 g, Rehmanniae radix preparata 15 g, desert-living cistanche (Herba cistanches) 10 g, deer horn glue (Colla cornus cervi) 10 g, medicinal Indian mulberry root (Radix morindae officinalis) 10 g, Cuscuta seed (Semen cuscutae) 15 g, East Asian tree fern rhizome (Rhizoma cibotii) 10 g, Himalayan teasel root (Radix dipsaci) 10 g, Sanqi (Radix notoginseng) 10 g, Danshen root (Radix salviae miltiorrhizae) 10 g, suberect spatholobus stem (Caulis spatholobi) 15 g, etc	Tang ZA 2012
Gumikang capsule	Capsule	Herbal mixture composed of human placenta (Placenta hominis), hairy antler (Cornu cervi pantotrichum), etc	Wang CC 2005
Qianggu paste	Paste	Chinese patent medicine manufactured by Affiliated Hospital of Wuhan University of Technology pharmacy, composed of flat stem milk vetch seed (Semen astragali complanati), Psoralea corylifolia (Fructus psoraleae), Epimedium (Herba epimedii), Chinese angelica (Radix angelicae sinensis), liquorice root (Radix glycyrrhizae), etc	Wang H 2007
Antai capsule	Capsule	Chinese herbal medicine manufactured by the medicine research institute of Fourth Military Medical University	Wang SW 2003
Hugu capsule	Capsule	Chinese patent medicine manufactured by Dongguan Super Success Pharmaceutical Co., Ltd. It is composed of tuber fleece flower root (Radix polygoni multiflori), Epimedium (Herba epimedii), Rehmanniae radix preparata, etc	Wang XD 2011
Bushen Yigu soft extract	Oral liquid	Herbal mixture composed of prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata)	Wang XY 2000

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		, Epimedium (Herba epimedii), largehead atractylodes rhizome (Rhizoma atractylodis macrocephalae), oriental water plantain rhizome (Rhizoma alismatis) , etc	
Jiangu capsule	Capsule	Chinese patent medicine manufactured by Affiliated Hospital of Luohe Medical College pharmacy, composed of liquorice root (Radix glycyrrhizae), Danshen root (Radix salviae miltiorrhizae) , Szechuan lovage rhizome (Rhizoma chuanxiong), Cuscuta seed (Semen cuscutae), Asiatic cornelian cherry fruit (Fructus corni), Dragon's bones (Os Draconis), oyster shell (Concha ostreae) and medicinal Indian mulberry root (Radix morindae officinalis)	Wang YZ 2008
Bushen Jianpi Migu prescription	Decoction	Investigator-prescribed herbal formulation composed of liquorice root (Radix glycyrrhizae), Cuscuta seed (Semen cuscutae), Epimedium (Herba epimedii) , Asiatic cornelian cherry fruit (Fructus corni), Dragon's bones (Os Draconis), oyster shell (Concha ostreae) , deer horn glue (Colla cornus cervi) , Rehmanniae radix preparata, desert-living cistanche (Herba cistanches), Eucommia bark (Cortex eucommiae) , suberect spatholobus stem (Caulis spatholobi), medicinal Indian mulberry root (Radix morindae officinalis) , Szechuan lovage rhizome (Rhizoma chuanxiong), liquorice root (Radix glycyrrhizae)	Wang ZK 2004
Kanggusong capsule (self developed)	Capsule	Manufactured by the First Attached Hospital of Hebei Northern Institute, composed of Epimedium (Herba epimedii) , Himalayan teasel root (Radix dipsaci) , Rehmanniae radix preparata, Barbary wolfberry fruit (Fructus lycii), liquorice root (Radix glycyrrhizae), Wolfiporia cocos (Poria), Danshen root (Radix salviae miltiorrhizae), Radix puerariae (Radix puerariae) and suberect spatholobus stem (Caulis spatholobi)	Wei RY 2011

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

Erxian soup	Liquid	Herbal mixture composed of common curculigo rhizome (Rhizoma curculiginis), Epimedium (Herba epimedii), medicinal Indian mulberry root (Radix morindae officinalis), Chinese angelica (Radix angelicae sinensis), common anemarrhena rhizome (Rhizoma anemarrhenae), Amur cork tree bark (Cortex phellodendri)	Wu JZ 2010
Urinary bladder meridian sticking	Patch	Herbal mixture composed of Rehmannia root (Radix rehmanniae), Epimedium (Herba epimedii), Dioscorea batatas (Rhizoma dioscoreae), Danshen root (Radix salviae miltiorrhizae), Fortune's drynaria rhizome (Rhizoma drynariae), Radix angelicae pubescentis, etc	Wu MS 2007
Kidney meridian sticking	Patch	Herbal mixture composed of Rehmannia root (Radix rehmanniae), Epimedium (Herba epimedii), Dioscorea batatas (Rhizoma dioscoreae), Danshen root (Radix salviae miltiorrhizae), Fortune's drynaria rhizome (Rhizoma drynariae), Radix angelicae pubescentis, etc	Wu MS 2007
Prescription for tonifying kidney	Pill	Herbal mixture composed of Rehmannia root (Radix rehmanniae), Epimedium (Herba epimedii), Dioscorea batatas (Rhizoma dioscoreae), Danshen root (Radix salviae miltiorrhizae), Fortune's drynaria rhizome (Rhizoma drynariae), Radix angelicae pubescentis, etc	Wu MS 2007
Gusong fang	Decoction	Herbal mixture composed of nutmeg, Chinese angelica (Radix angelicae sinensis), liquorice root (Radix glycyrrhizae) , Psoralea corylifolia (Fructus psoraleae) , Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), etc	Xiao W 2008
Bugu Shengsui capsule	Capsule	Herbal mixture composed of Psoralea corylifolia (Fructus psoraleae), East Asian tree fern rhizome (Rhizoma cibotii) , Sanqi (Radix notoginseng), ginseng	Xie YM 1997

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		(Radix ginseng), etc	
Jiangu granule	Granule	Chinese patent medicine manufactured by Ruijin hospital pharmacy, composed of Epimedium (Herba epimedii), Radix codonopsis pilosulae (Radix codonopsis) , large-head atractylodes rhizome (Rhizoma atractylodis macrocephalae), glossy privet fruit (Fructus ligustri lucidi), etc	Xiong YH 2008
Gusongbao granule	Granule	Chinese patent medicine composed of Epimedium (Herba epimedii), Rehmanniae radix preparata, oyster shell (Concha ostreae), etc	Xiong YH 2008; Zhan HS 2009
Yishen Yanggan mixture	Oral liquid	Herbal mixture composed of liquorice root (Radix glycyrrhizae), common macrocarpium fruit (Fructus corni), Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), Psoralea corylifolia (Fructus psoraleae), Chinese angelica (Radix angelicae sinensis), etc	Xu W 2005
Acupoint sticking of Migudan	Patch	Herbal mixture composed of Psoralea corylifolia (Fructus psoraleae), Fortune's drynaria rhizome (Rhizoma drynariae) , Himalayan teasel root (Radix dipsaci) , Szechuan lovage rhizome (Rhizoma chuanxiong), processed radix aconiti (Radix aconiti preparata), tuberculate Speranskia herb (Garden balsam stem) , two-tooth achyranthes root (Radix achyranthis bidentatae), Manchurian wild ginger (Herba asari), etc	Xu YL 2007
Huangqi	Decoction	Single herb of liquorice root (Radix glycyrrhizae)	Yang B 2007
Bushen Zhuanggutang	Decoction	Investigator-prescribed formula composed of Eucommia bark (Cortex eucommiae) , Rehmanniae radix preparata, Fortune's drynaria rhizome (Rhizoma drynariae) , Barbary wolfberry fruit (Fructus lycii) , Epimedium (Herba epimedii), Radix codonopsis pilosulae (Radix codonopsis), liquorice root (Radix glycyrrhizae) , common macrocarpium fruit (Fructus	Ye AN 1998

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		corni) and Sanqi (Radix notoginseng)	
Shangke Jiegu tablet	Tablet	Chinese patent herbal medicine composed of Sanqi (Radix notoginseng), safflower (Flos carthami), frankincense (olibanum), myrrh (Commiphora molmol), ground beetle (Eupolyphaga seu steleophaga), etc	Yuan YN 2000
Xuduanzhuanggu capsule	Capsule	Chinese patent medicine manufactured by Zhejiang Di'er medicine limited company	Zhan HS 2009
Bushenyiqihuoxue soup	Decoction	Herbal mixture composed of Psoralea corylifolia (Fructus psoraleae), Fortune's drynaria rhizome (Rhizoma drynariae), glossy privet fruit (Fructus ligustri lucidi), Epimedium (Herba epimedii), liquorice root (Radix glycyrrhizae), white peony root (Radix paeoniae alba), Chinese angelica (Radix angelicae sinensis), Himalayan teasel root (Radix dipsaci), ground beetle (Eupolyphaga seu steleophaga) and liquorice root (Radix glycyrrhizae)	Zhang DS 2011
Liuwei Dihuang pill	Pill	Chinese patent medicine	Ma C 2011; Zhang J 2003
Yigu capsule	Capsule	Herbal mixture composed of Epimedium (Herba epimedii), Barbary wolfberry fruit (Fructus lycii), Chinese angelica (Radix angelicae sinensis), two-tooth achyranthes root (Radix achyranthis bidentatae), etc	Zhang RH 2004
Bushenjianpi Zhuangguyin	Decoction	Herbal mixture composed of human placenta (Placenta hominis), Dioscorea batatas (Rhizoma dioscoreae), red peony root (Radix paeoniae rubra), white peony root (Radix paeoniae alba), Chinese angelica (Radix angelicae sinensis), Radix codonopsis pilosulae (Radix codonopsis), liquorice root (Radix glycyrrhizae), large-head atractylodes rhizome (Rhizoma atractylodis macrocephalae), common macrocarpium fruit (Fructus corni), common cnidium fruit (Fructus cnidii), Chinese thorowax root (Radix bu-	Zhang XG 2011

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		pleuri), Eucommia bark (Cortex eucommiae), two-tooth achyranthes root (Radix achyranthis bidentatae), Amur cork tree bark (Cortex phellodendri), tortoise shell (Carapax et plastrum testudinis), liquorice root (Radix glycyrrhizae) , Psoralea corylifolia (Fructus psoraleae) , Wolfiporia cocos (Poria), scorpion, Epimedium (Herba epimedii), Sanqi (Radix notoginseng), leech (Hirudo), etc	
Bushen Huoxue capsule	Capsule	Herbal mixture composed of Epimedium (Herba epimedii) , Eucommia bark (Cortex eucommiae) , Himalayan teasel root (Radix dipsaci), deer horn glue (Colla cornus cervi), common macrocarpium fruit (Fructus corni) , liquorice root (Radix glycyrrhizae), Dioscorea batatas (Rhizoma dioscoreae), Chinese angelica (Radix angelicae sinensis), Safflower (Flos carthami), etc	Zhang XJ 2008
TPF capsule	Capsule	Chinese herbal medicine composed of cake uterine, Colla corii asini, Corium stomachium galli	Zhang YL 1996
Shigu yin	Liquid	Chinese patent medicine manufactured by Third Affiliated Hospital of Luohe Medical College pharmacy, composed of Rehmanniae radix preparata, East Asian tree fern rhizome (Rhizoma cibotii), Epimedium (Herba epimedii), Psoralea corylifolia (Fructus psoraleae), oyster shell (Concha ostreae), Dioscorea batatas (Rhizoma dioscoreae), etc	Zhang YP 2007
Huoluo Gukang pill	Pill	Condensed pill composed of Psoralea corylifolia (Fructus psoraleae), Fortune's drynaria rhizome (Rhizoma drynariae), liquorice root (Radix glycyrrhizae), safflower (Flos carthami), Zedoary (Rhizoma curcumae), deer horn glue (Colla cornus cervi), Lumbricus (Pheretima), etc	Zhang YS 2003
Zhuangguqiangjin tablet	Tablet	Manufactured by Dongwan Hospital of Traditional Chinese Medicine, composed of Slenderstyle acanthopanax bark (Cortex acanthopanacis), deer horn glue	Zhang ZF 2011

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		(Colla cornus cervi), desert-living cistanche (Herba cistanches), Philippine flemingia root (Moghania philippinensis li.), Eucommia bark (Cortex eucommiae), Epimedium (Herba epimedii) , two-tooth achyranthes root (Radix achyranthis bidentatae), Radix codonopsis pilosulae (Radix codonopsis), Chinese angelica (Radix angelicae sinensis), tortoise shell (Carapax et plastrum testudinis), tuber fleece flower root (Radix polygoni multiflori), Amur cork tree bark (Cortex phellodendri), Cortex lycii radicis (Cortex lycii), incised notopterygium rhizome (Rhizoma et radix notopterygii) and Radix angelicae pubescentis	
Shujinbogu tablet	Tablet	Manufactured by Dongwan Hospital of Traditional Chinese Medicine, composed of tree peony bark (Cortex moutan), rhubarb (Radix et rhizoma rhei), two-tooth achyranthes root (Radix achyranthis bidentatae), tuberculate Speranskia herb (Garden balsam stem), Szechuan lovage rhizome (Rhizoma chuanxiong), Chinese angelica (Radix angelicae sinensis), Rehmannia root (Radix rehmanniae), mulberry twig (Ramulus mori), ground beetle (Eupolyphaga seu steleophaga), common cnidium fruit (Fructus cnidii), common aucklandia root (Radix aucklandiae), Fortune's drynaria rhizome (Rhizoma drynariae) and Flos caryophyllata (Flos caryophylli)	Zhang ZF 2011
Zishen prescription	Decoction	Investigator-prescribed formula composed of Rehmanniae radix preparata, common macrocarpium fruit (Fructus corni), Dioscorea batatas (Rhizoma dioscoreae), Wolfiporia cocos (Poria), Barbary wolfberry fruit (Fructus lycii), tortoise shell glue (Colla carapacis et plastri testudinis), crude Dragon's bones (Os Draconis) and crude oyster shell (Concha ostreae)	Zhao G 2002
Kanggusong capsule	Capsule	Chinese patent medicine manufactured by Shenzhen Sanjiu medicine limited	Zhao HX 2001

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		company, composed of hairy antler (Corn Cervi Pantotrichum), Epimedium (Herba epimedii), desert-living cistanche (Herba cistanches), Psoralea corylifolia (Fructus psoraleae), common cnidium fruit (Fructus cnidii), etc	
Yinyanghuo	Decoction	Single herb of Epimedium (Herba epimedii)	Zhao LN 2003
Jinwugutong capsule	Capsule	Chinese patent medicine manufactured by Guizhou Shenqi Pharmaceutical limited company, composed of Epimedium (Herba epimedii), two-tooth achyranthes root (Radix achyranthis bidentatae) , Cibotium barometz (Rhizoma cibotii) , Zaocys dhumnade (Zaocys), Psoralea corylifolia (Fructus psoraleae), etc	Zheng WK 2007
Gushen Yijing tang	Decoction	Herbal mixture composed of Fortune's drynaria rhizome (Rhizoma drynariae), Psoralea corylifolia (Fructus psoraleae), Barbary wolfberry fruit (Fructus lycii), liquorice root (Radix glycyrrhizae), prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata), white peony root (Radix paeoniae alba), glossy privet fruit (Fructus ligustri lucidi), Dioscorea batatas (Rhizoma dioscoreae) , Wolfiporia cocos (Poria), Chinese date (Fructus jujubae), etc	Zhong RQ 2007
Tongbu Qianggutang	Decoction	Herbal mixture composed of Epimedium (Herba epimedii), glossy privet fruit (Fructus ligustri lucidi), liquorice root (Radix glycyrrhizae), Sanqi (Radix notoginseng), wine rhubarb (Radix et rhizoma rhei), etc	Zhou LZ 2001
Guilu Erxiantang	Decoction	Herbal mixture composed of tortoise shell (Carapax et plastrum testudinis), hairy antler (Corn Cervi Pantotrichum) , Epimedium (Herba epimedii), clematis root (Radix clematidis), prepared rhizome of adhesive rehmannia (Radix rehmanniae preparata), desert-living cistanche (Herba cistanches), medicinal Indian mulberry root (Radix morindae officinalis), liquorice root (Radix gly-	Zhou XT 2001

Table 1. The preparation and composition of the Chinese herbal medicines in the included trials (*Continued*)

		cyrrhizae), Radix codonopsis pilosulae (Radix codonopsis), Chinese angelica (Radix angelicae sinensis) and safflower (Flos carthami)	
Huangqi Sanxian tang	Decoction	Herbal mixture composed of common curculigo rhizome (Rhizoma curculiginis), Epimedium (Herba epimedii), liquorice root (Radix glycyrrhizae), Sanqi (Radix notoginseng), etc	Zhou ZK 2006
Bushen Tianjing Huoxue therapy	Decoction	Herbal mixture composed of Eucommia bark (Cortex eucommiae) 15 g, Himalayan teasel root (Radix dipsaci) 15 g, Chinese taxillus twig (Herba taxilli) 10 g, Epimedium (Herba epimedii) 15 g, Psoralea corylifolia (Fructus psoraleae) 15 g, common macrocarpium fruit (Fructus corni) 10 g, Danshen root (Radix salviae miltiorrhizae) 10g, suberect spatholobus stem (Caulis spatholobi) 30 g, Fortune's drynaria rhizome (Rhizoma drynariae) 30 g, two-tooth achyranthes root (Radix achyranthis bidentatae) 30 g, membranous milk vetch root (Radix astragali) 30 g, large-head atractylodes rhizome (Rhizoma atractylodis macrocephalae) 10 g, Wolfiporia cocos (Poria) 20 g and liquorice root (Radix glycyrrhizae) 5 g	Zhu HJ 2011
Guben Zhuanggu capsule	Capsule	Chinese patent medicine manufactured by Zhejiang Di'er medicine limited company	Zou JJ 2005
Bushen Zhuanggu granules	Granule	Chinese patent medicine manufactured by Yifan Pharmacy Company of Guangdong Province, with the following seven herbal compounds: Epimedium (Herba epimedii), Rehmannia (Rehmannia), Dioscorea batatas (Rhizoma dioscoreae) , Cornus officinalis (Fructus corni), Cinnamomum cassia (Cortex cinnamomi), Drynaria fortunei (Rhizoma drynariae) and Morinda officinalis (Radix morindae officinalis)	Deng WM 2012

APPENDICES

Appendix 1. MEDLINE search strategy

Database	Time span	Search strategy
MEDLINE	1966 to 2013	1. exp bone diseases, metabolic/ 2. osteoporos#s.tw. 3. bone density/ 4. bone densit$.tw. 5. bone mineral densit$.tw. 6. exp bone/ and bones.mp. [mp=title, original title, abstract, name of substance word, subject heading word] 7. bone loss$.tw. 8. osteomalacia.tw. 9. osteodystrophy.tw. 10. exp bone demineralization, pathologic/ 11. (bone adj demineralization).tw. 12. osteopenia.tw. 13. bone mass.tw. 14. exp densitometry/ 15. densitometry.tw. 16. dexa.tw. 17. exp fractures/ 18. fracture$.tw. 19. or/1-18 20. exp Medicine, Herbal/ 21. exp Plants, Medicinal/ 22. exp Medicine, Traditional/ 23. exp Drugs, Chinese Herbal/ 24. herb$.tw. 25. plant.mp. or plants.tw. [mp=title, original title, abstract, name of substance word, subject heading word] 26. phytomedicine.tw. 27. botanical.tw. 28. weed$.tw. 29. algae.tw. 30. (fungi or fungus).tw. 31. ((traditional or chinese or herbal) adj medicine).tw. 32. ((oriental or chinese) adj tradition$).tw. 33. or/20-32 34. 19 and 33

Appendix 2. EMBASE search strategy

Database	Time span	Search strategy
EMBASE	1998 to 2013	1. exp OSTEOPOROSIS/ 2. exp Metabolic Bone Disease/ 3. osteoporo$.tw. 4. exp Bone Density/ 5. (bone adj2 densit$).tw. 6. exp BONE/ 7. bone loss.tw. 8. osteomalacia.tw. 9. osteodystrophy.tw. 10. exp Bone Demineralization/ 11. (bone adj demineral#ation).tw. 12. osteopenia.tw. 13. bone mass.tw. 14. exp bone densitometry/ 15. densitometry.tw. 16. dexa.tw. 17. exp Fracture/ 18. fracture$.tw. 19. or/1-18 20. exp Herbal Medicine/ 21. exp Medicinal Plant/ 22. exp Traditional Medicine/ 23. exp Chinese Medicine/ 24. herb$.tw. 25. (plant or plants).tw. 26. phytomedicine.tw. 27. botanical.tw. 28. weed$.tw. 29. algae.tw. 30. (fungi or fungus).tw. 31. ((traditional or chinese or herbal) adj medicine).tw. 32. ((oriental or chinese) adj tradition$).tw. 33. or/20-32 34. 19 and 33 35. random$.ti,ab. 36. factorial$.ti,ab. 37. (crossover$ or cross over$ or cross-over$).ti,ab. 38. placebo$.ti,ab. 39. (doubl$ adj blind$).ti,ab. 40. (singl$ adj blind$).ti,ab. 41. assign$.ti,ab. 42. allocat$.ti,ab. 43. volunteer$.ti,ab. 44. crossover procedure.sh. 45. double blind procedure.sh.

(*Continued*)

		46. randomized controlled trial.sh. 47. single blind procedure.sh. 48. or/35-47 49. exp animal/ or nonhuman/ or exp animal experiment/ 50. exp human/ 51. 49 and 50 52. 49 not 51 53. 48 not 52 54. 34 and 53

Appendix 3. CENTRAL search strategy

Database	Time span	Search strategy
CENTRAL in *The Cochrane Library*	Issue 12, 2012	#1 MeSH descriptor Osteoporosis explode all trees in MeSH products #2 MeSH descriptor Bone Diseases, Metabolic explode all trees in MeSH products #3 osteoporo* in All Fields in all products #4 MeSH descriptor Bone Density explode all trees in MeSH products #5 bone near/j2 densit* in All Fields in all products #6 MeSH descriptor Bone and Bones explode all trees in MeSH products #7 bone loss in All Fields in all products #8 osteomalacia in All Fields in all products #9 osteodystrophy in All Fields in all products #10 MeSH descriptor Bone Demineralization, Pathologic explode all trees in MeSH products #11 bone next deminerali* in All Fields in all products #12 osteopenia in All Fields in all products #13 bone mass in All Fields in all products #14 MeSH descriptor Densitometry explode all trees in MeSH products #15 densitometry in All Fields in all products #16 dexa in All Fields in all products #17 MeSH descriptor Fractures, Bone explode all trees in MeSH products #18 fractur* in All Fields in all products #19 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18) #20 MeSH descriptor Medicine, Herbal explode all trees in MeSH products #21 MeSH descriptor Plants, Medicinal explode all trees in MeSH products #22 MeSH descriptor Medicine, Traditional explode all trees in MeSH products #23 MeSH descriptor Drugs, Chinese Herbal explode all trees in MeSH products #24 herb* in All Fields in all products #25 plant or plants in All Fields in all products #26 phytomedicine in All Fields in all products

(*Continued*)

		#27 botanical in All Fields in all products #28 weed* in All Fields in all products #29 algae in All Fields in all products #30 fungi or fungus in All Fields in all products #31 (traditional or chinese or herbal) next medicine in All Fields in all products #32 (oriental or chinese) next tradition* in All Fields in all products #33 (#20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32) #34 (#19 AND #33)

Appendix 4. CBM search strategy

Database	Time span	Search strategy
CBM	1979 to 2013	1 explode "osteoporosis"/cure of Chinese traditional medicine, the combination of Western and traditional medicine 2 osteoporosis/tw 3 Chinese herbal medicine/tw 4 Chinese traditional medicine/tw 5 2 and (3 or 4) 6 1 or 5

Appendix 5. Effects of interventions on biochemical indicators

Chinese herbal medicines versus placebo (Comparison 01)

Oestradiol (E2) levels

Compared with the placebo group, those treated with Bushen Yigu soft extract after three months treatment had statistically significantly increased serum levels of oestradiol (mean difference (MD) 122.89 pg/ml; 95% confidence interval (CI) 92.97 to 152.81) (Analysis 1.3) (Wang XY 2000).

Chinese herbal medicines versus no intervention (Comparison 02)

Oestradiol (E2) levels

There was no significant difference in levels of serum or urinary oestradiol between Chinese herbal medicines (Bushen Shengsui principle (Analysis 2.2) (Liao L 2004), Yishen Zhuanggu mixture (Analysis 2.2) (Gong L 2001), Huoluo Gukang pills or Gushukang granule (Analysis 2.2) (Zhang YS 2003)) and no intervention after six months treatment.

Bone Gla protein (BGP) levels

Compared with the no intervention group, in those treated with Yishen Zhuanggu mixture or Shengu capsule there were no statistically significant effects on BGP after six months treatment (MD -1.00 μg/L; 95% CI -6.15 to 4.15 and MD -5.10 μg/L; 95% CI -10.63 to 0.43, respectively) (Analysis 2.3) (Gong L 2001). Those treated with Huoluo Gukang pills or Gushukang granule had statistically significant increases in BGP after six months treatment (MD 2.70 μg/L; 95% CI 1.23 to 4.17 and MD 3.50 μg/L; 95% CI 1.92 to 5.08, respectively) (Analysis 2.3) (Zhang YS 2003). Treatment with Shigu yin also increased BGP after six months treatment (MD 1.20 μg/L; 95% CI 0.17 to 2.23) (Analysis 2.3) (Zhang YP 2007).

Chinese herbal medicines versus western medicine (Comparison 03)

Oestradiol (E2) levels

Nine trials showed positive effects of herbal treatments on serum or urinary measures of oestradiol when compared to calcium supplementation, or calcium combined with vitamin D supplementation, or calcium combined with synthesised isoflavone (ipriflavone):

- Kanggusong granule versus Caltrate after nine months treatment (MD 11.00 pg/ml; 95% CI 6.97 to 15.03), Kanggusong granule versus ipriflavone plus Caltrate after nine months treatment (MD 12.17 pg/ml; 95% CI 8.27 to 16.07) (Analysis 3.5) (An SJ 2000);
- Strong Bone capsule versus Caltrate after three months treatment (MD 10.46 pg/ml; 95% CI 4.29 to 16.63) (Analysis 3.5) (Cui TH 1999);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD 8.78 pg/ml; 95% CI 0.92 to 16.64) (Analysis 3.5) (Ou L 2011);
- Qianggu soft extract versus calcium gluconate after six months treatment (MD 4.20 pg/ml; 95% CI 0.89 to 7.51) (Analysis 3.5) (Peng T 2002);
- Gumikang capsule versus calcium gluconate after six months treatment (MD 3.50 pg/ml; 95% CI 1.14 to 5.86) (Analysis 3.5) (Wang CC 2005);
- Yanghuo Sanzi tang versus Caltrate after six months treatment (MD 23.06 pg/ml; 95% CI 17.82 to 28.30) (Analysis 3.5) (Qiu RB 2004);
- Jingujian granule versus Caltrate after three months treatment (MD 4.85 pg/ml; 95% CI 4.56 to 5.14) (Analysis 3.5) (Li YH 2010);
- Qianggu paste versus calcium gluconate tablets after six months treatment (MD 4.20 pg/ml; 95% CI 1.79 to 6.61) (Analysis 3.5) (Wang H 2007);
- Bushen Huoxue capsule versus Caltrate plus Rocalirol after 12 months treatment (MD 2.13 pg/ml; 95% CI 0.42 to 3.84) (Analysis 3.5) (Zhang XJ 2008).

However, in the following two trials, Chinese herbal medicines did not show a significant effect:

- Bushen Qiangshen pill versus Caltrate (MD 6.71 pg/ml; 95% CI -2.28 to 15.70) (Analysis 3.5) (Mu G 2001a);
- Tongbu Qianggutang versus calcium plus vitamin D3 after three months treatment (female MD 5.03 pg/ml; 95% CI -8.01 to 18.07; male MD 1.89 pg/ml; 95% CI -17.98 to 21.77) (Analysis 3.5) (Zhou LZ 2001).

Seven trials showed a better effect of Chinese herbal medicines when compared with western medicine:

- Bushen Jianpi Huoxue recipe versus alendronate sodium tablets after six months treatment (MD 3.15 pg/ml; 95% CI 0.28 to 6.02) (Analysis 3.5) (He MT 2007);
- prescription for tonifying kidney versus ipriflavone (MD 14.00 pg/ml; 95% CI 3.68 to 24.32), kidney meridian sticking versus ipriflavone (MD 11.99 pg/ml; 95% CI 1.15 to 22.83), urinary bladder meridian sticking versus ipriflavone (MD 17.99 pg/ml; 95% CI 7.65 to 28.33), Gushukang granule versus ipriflavone (MD 13.98 pg/ml; 95% CI 3.90 to 24.06) after six months treatment (Analysis 3.5) (Wu MS 2007);
- Gukang oral liquid versus alendronate sodium tablets after six months treatment (MD 5.09 pg/ml; 95% CI 2.81 to 7.37) (Analysis 3.5) (Wang JM 2008);
- Jianshenfang granule versus alendronate sodium tablets after six months treatment (MD 5.83 pg/ml; 95% CI 4.21 to 7.45) (Analysis 3.5) (Li BL 2007);
- Jiangu recipe versus alendronate sodium tablets after 12 months treatment (MD 10.75 pg/ml; 95% CI 8.55 to 12.95) (Analysis 3.5) (Qiu RB 2008);

- Bushen Zhuanggu tang versus alendronate sodium tablets after three months treatment (MD 5.37 pg/ml; 95% CI 2.07 to 8.67) (Analysis 3.5) (Ling JY 2008);
- Bushen Yigu soft extract versus Alfacalcidol after three months treatment (MD 76.29 nmol/L; 95% CI 31.19 to 121.39) (Analysis 3.5) (Wang XY 2000).

However, another five trials found no significant difference between groups in levels of oestradiol:
- Bushen Shengsui principle versus conjugated oestrogens plus medroxyprogesterone after six months treatment (MD 4.00 pg/ml; 95% CI -3.92 to 11.92) (Analysis 3.5) (Liao L 2004);
- Gukang oral liquid versus alendronate after six months treatment (MD 3.90 pg/ml; 95% CI -6.64 to 14.44) (Analysis 3.5) (Shao M 2003);
- Kanggusong granule versus ipriflavone after three months treatment (MD 4.18 pg/ml; 95% CI -13.85 to 22.21) (Analysis 3.5) (Wu MS 2001);
- Gukang decoction versus alendronate sodium tablets after four months treatment (MD -0.65 pg/ml; 95% CI -9.04 to 7.74) (Analysis 3.5) (Chen X 2008);
- Gujian capsule versus alfacalcidol after six months treatment (MD 22.35 pg/ml; 95% CI -10.51 to 55.21) (Analysis 3.5) (Meng XD 2003).

One trial showed a worse effect of Chinese herbal medicine: Huangqi Sanxian tang versus nilestriol after three months treatment (MD -32.97 pg/ml; 95% CI -39.42 to -26.52) (Analysis 3.5) (Zhou ZK 2006).

Serum calcium (Ca) levels

In 12 trials comparing herbal treatments to calcium and vitamin D and, in one case, isoflavone, there were no significant differences between groups in changes in serum calcium:
- Kanggusong granule versus Caltrate after nine months treatment (MD -0.03 mmol/L; 95% CI -0.11 to 0.05) (Analysis 3.6) (An SJ 2000);
- Gushukang granule versus Calcium carbonate with vitamin D chewable tablets after six months treatment (MD -0.02 mmol/L; 95% CI -0.10 to 0.06) (Analysis 3.6) (Chen ZX 2002);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD -0.01 mmol/L; 95% CI -0.05 to 0.03) (Analysis 3.6) (Ou L 2011);
- Bushen Jianpi Migu prescription versus Caltrate after three months treatment (MD 0.01 mmol/L; 95% CI -0.05 to 0.07) (Analysis 3.6) (Wang ZK 2004);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet after six months treatment (MD 0.10 mmol/L; 95% CI -0.05 to 0.25) (Analysis 3.6) (Xie YM 1997);
- Shenyao capsules versus Caltrate after six months treatment (MD 0.02 mmol/L; 95% CI -0.08 to 0.12) (Analysis 3.6) (Chen NQ 2006);
- prescription for tonifying kidney versus ipriflavone (MD 0.00 mmol/L; 95% CI -0.05 to 0.05), kidney meridian sticking versus ipriflavone (MD -0.01 mmol/L; 95% CI -0.06 to 0.04), urinary bladder meridian sticking versus ipriflavone (MD -0.01 mmol/L; 95% CI -0.06 to 0.04), Gushukang granule versus ipriflavone (MD -0.02 mmol/L; 95% CI -0.07 to 0.03) after six months treatment (Analysis 3.6) (Wu MS 2007);
- Gukang oral liquid versus alendronate sodium tablets after six months treatment (MD -0.02 mmol/L; 95% CI -0.06 to 0.02) (Analysis 3.6) (Wang JM 2008);
- Qianggu capsule versus active vitamin D3 after six months treatment (MD 0.01 mmol/L; 95% CI -0.06 to 0.08) (Analysis 3.6) (Wang J 2007);
- Bushen Yangxue tang versus calcium gluconate after six months treatment (MD 0.13 mmol/L; 95% CI -0.00 to 0.26) (Analysis 3.6) (Zhan ML 2007);
- Erxian soup versus Caltrate after six months treatment (MD -0.02 mmol/L; 95% CI -0.25 to 0.21) (Analysis 3.6) (Wu JZ 2010);
- Tongbu Qianggutang versus calcium plus vitamin D3 after three months treatment (MD -0.02 mmol/L; 95% CI -0.10 to 0.06) (Analysis 3.6) (Zhou LZ 2001).

Patients treated with herbal formulae for three to six months showed significantly higher levels of serum calcium in six trials comparing herbal treatment with calcium supplementation, isoflavone supplementation or conjugated hormones:
- Gumikang capsule versus calcium gluconate after six months treatment (MD 1.40 mmol/L; 95% CI 1.39 to 1.41) (Analysis 3.6) (Wang CC 2005);

- Kanggusong granule versus ipriflavone after three months treatment (MD 0.10 mmol/L; 95% CI 0.03 to 0.17) (Analysis 3.6) (Wu MS 2001);
- Yinyanghuo versus conjugated oestrogens after three to six months treatment (MD 0.54 mmol/L; 95% CI 0.23 to 0.85) (Analysis 3.6) (Zhao LN 2003);
- Guli powder versus Caltrate after three months treatment (MD 0.09 mmol/L; 95% CI 0.02 to 0.16) (Analysis 3.6) (Lan ZX 2006);
- Gushen Yijing tang versus Caltrate after six months treatment (MD 0.23 mmol/L; 95% CI 0.11 to 0.35) (Analysis 3.6) (Zhong RQ 2007);
- Bushenjianpi Zhuangguyin versus Caltrate and calcitonin ampoule after 12 weeks (MD 0.74 mmol/L; 95% CI 0.66 to 0.82) (Analysis 3.6) (Zhang XG 2011).

Five trials reported statistically significantly lower levels of serum calcium in the group treated with Chinese herbal medicines compared to supplementation with calcium or calcium and vitamin D and, in one case, isoflavone plus Caltrate:
- Kanggusong granule versus ipriflavone plus Caltrate after nine months treatment (MD -0.09 mmol/L; 95% CI -0.17 to -0.01) (Analysis 3.6) (An SJ 2000);
- Strong Bone capsule versus Caltrate after three months treatment (MD -0.13 mmol/L; 95% CI -0.22 to -0.04) (Analysis 3.6) (Cui TH 1999);
- Qianggu soft extract versus calcium gluconate (MD -0.03 mmol/L; 95% CI -0.05 to -0.01) (Analysis 3.6) (Peng T 2002);
- Qianggu paste versus calcium gluconate tablets after six months treatment (MD -0.03 mmol/L; 95% CI -0.06 to -0.00) (Analysis 3.6) (Wang H 2007);
- Jiangu capsule versus Caltrate after 12 months treatment (MD -0.06 mmol/L; 95% CI -0.11 to -0.01) (Analysis 3.6) (Wang YZ 2008).

Phosphorus (P) levels

Eleven trials showed no significant effects of herbal treatments on phosphorus when compared to calcium supplementation, or calcium combined with vitamin D supplementation, or calcium combined with synthesised isoflavone (ipriflavone):
- Kanggusong granule versus ipriflavone plus Caltrate (MD 0.06 mmol/L; 95% CI -0.03 to 0.15), Kanggusong granule versus Caltrate (MD -0.01 mmol/L; 95% CI -0.29 to 0.27) after nine months treatment (Analysis 3.7) (An SJ 2000);
- Gushukang granule versus Calcium carbonate with vitamin D chewable tablets after six months treatment (MD 0.01 mmol/L; 95% CI -0.09 to 0.11) (Analysis 3.7) (Chen ZX 2002);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD 0.00 mmol/L; 95% CI -0.15 to 0.15) (Analysis 3.7) (Ou L 2011);
- Bushen Jianpi Migu prescription versus Caltrate after three months treatment (MD 0.03 mmol/L; 95% CI -0.02 to 0.08) (Analysis 3.7) (Wang ZK 2004);
- Shenyao capsules versus Caltrate after six months treatment (MD -0.01 mmol/L; 95% CI -0.08 to 0.06) (Analysis 3.7) (Chen NQ 2006);
- Guli powder versus Caltrate after three months treatment (MD -0.05 mmol/L; 95% CI -0.13 to 0.03) (Analysis 3.7) (Lan ZX 2006);
- Gushen Yijing tang versus Caltrate after six months treatment (MD 0.04 mmol/L; 95% CI -0.09 to 0.17) (Analysis 3.7) (Zhong RQ 2007);
- Qianggu capsule versus active vitamin D3 after six months treatment (MD 0.02 mmol/L; 95% CI -0.05 to 0.09) (Analysis 3.7) (Wang J 2007);
- Jiangu capsule versus Caltrate after 12 months treatment (MD 0.09 mmol/L; 95% CI -0.20 to 0.38) (Analysis 3.7) (Wang YZ 2008);
- Erxian soup versus Caltrate after six months treatment (MD -0.03 mmol/L; 95% CI -0.20 to 0.14) (Analysis 3.7) (Wu JZ 2010);
- Tongbu Qianggutang versus calcium plus vitamin D3 after three months treatment (MD -0.01 mmol/L; 95% CI -0.12 to 0.10) (Analysis 3.7) (Zhou LZ 2001).

Three trials found no significant differences between groups for phosphorus when comparing herbal formulae to conventional western medicines:
- Kanggusong granule versus ipriflavone after three months treatment (MD -0.07 mmol/L; 95% CI -0.20 to 0.06) (Analysis 3.7) (Wu MS 2001);

- Yinyanghuo versus conjugated oestrogens after three to six months treatment (MD 0.13 mmol/L; 95% CI -0.13 to 0.39) (Analysis 3.7) (Zhao LN 2003);
- prescription for tonifying kidney versus ipriflavone (MD -0.04 mmol/L; 95% CI -0.15 to 0.07), kidney meridian sticking versus ipriflavone (MD -0.01 mmol/L; 95% CI -0.13 to 0.11), urinary bladder meridian sticking versus ipriflavone (MD -0.01 mmol/L; 95% CI -0.13 to 0.11), Gushukang granule versus ipriflavone (MD -0.01 mmol/L; 95% CI -0.13 to 0.11) after six months treatment (Analysis 3.7) (Wu MS 2007).

One trial showed better effects of Bushen Zhuanggu tang compared to alendronate sodium tablets after three months treatment (MD 0.24 mmol/L; 95% CI 0.10 to 0.38) (Analysis 3.7) (Ling JY 2008).
Two other trials showed worse effects of Chinese herbal medicines:
- Strong Bone capsule compared with Caltrate after three months treatment (MD -0.12 mmol/L; 95% CI -0.21 to -0.03) (Analysis 3.7) (Cui TH 1999);
- Bushenjianpi Zhuangguyin versus Caltrate and calcitonin ampoule after 12 weeks treatment (MD -0.37 mmol/L; 95% CI -0.48 to -0.26) (Analysis 3.7) (Zhang XG 2011).

Alkaline phosphatase (ALP) levels

Eleven trials showed no significant effects of herbal treatments on alkaline phosphatase when compared to calcium supplementation, or calcium combined with vitamin D supplementation, or calcium combined with synthesised isoflavone (ipriflavone):
- Gushukang granule versus Calcium carbonate with vitamin D chewable tablets after six months treatment (MD -0.50 μmol s^{-1}/L; 95% CI -1.70 to 0.70) (Analysis 3.8) (Chen ZX 2002);
- Strong Bone capsule versus Caltrate after three months treatment (MD -0.07 μmol s^{-1}/L; 95% CI -0.25 to 0.11) (Analysis 3.8) (Cui TH 1999);
- Bushen Qiangshen pill versus Caltrate after three months treatment (MD 0.27 μmol s^{-1}/L; 95% CI -1.27 to 1.81) (Analysis 3.8) (Mu G 2001a);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet after six months treatment (MD -0.29 μmol s^{-1}/L; 95% CI -1.67 to 1.09) (Analysis 3.8) (Xie YM 1997);
- Liuwei Dihuang pills versus calcium after 12 months treatment (MD 0.55 μmol s^{-1}/L; 95% CI -0.12 to 1.22) (Analysis 3.8) (Zhang J 2003);
- Guli powder versus Caltrate after three months treatment (MD 0.30 μmol s^{-1}/L; 95% CI -2.97 to 3.57) (Analysis 3.8) (Lan ZX 2006);
- Qianggu capsule versus active vitamin D3 after six months treatment (MD 0.71 μmol s^{-1}/L; 95% CI -1.17 to 2.59) (Analysis 3.8) (Wang J 2007);
- Jingujian granule versus Caltrate after three months treatment (MD 0.53 μmol s^{-1}/L; 95% CI -0.69 to 1.75) (Analysis 3.8) (Li YH 2008);
- Bushenjianpi Zhuangguyin versus Caltrate and calcitonin ampoule after 12 weeks treatment (MD -0.82 μmol s^{-1}/L; 95% CI -2.83 to 1.19) (Analysis 3.8) (Zhang XG 2011);
- Erxian soup versus Caltrate after six months treatment (MD 0.00 μmol s^{-1}/L; 95% CI -0.87 to 0.87) (Analysis 3.8) (Wu JZ 2010);
- Tongbu Qianggutang versus calcium plus vitamin D3 after three months treatment (MD 0.18 μmol s^{-1}/L; 95% CI -1.08 to 1.44) (Analysis 3.8) (Zhou LZ 2001).

Twelve trials showed better effects of herbal treatments on alkaline phosphatase when compared to calcium supplementation, or calcium combined with vitamin D supplementation, or calcium combined with synthesised isoflavone (ipriflavone):
- Kanggusong granule versus ipriflavone plus Caltrate (MD 1.69 μmol s^{-1}/L; 95% CI 0.79 to 2.59), Kanggusong granule versus Caltrate (MD 1.28 μmol s^{-1}/L; 95% CI 0.30 to 2.26) after nine months treatment (Analysis 3.8) (An SJ 2000);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD 0.91 μmol s^{-1}/L; 95% CI 0.15 to 1.67) (Analysis 3.8) (Ou L 2011);
- Qianggu soft extract versus calcium gluconate after six months treatment (MD 3.60 μmol s^{-1}/L; 95% CI 2.62 to 4.58) (Analysis 3.8) (Peng T 2002);
- Gumikang capsule versus calcium gluconate after six months treatment (MD 3.41 μmol s^{-1}/L; 95% CI 2.84 to 3.98) (Analysis 3.8) (Wang CC 2005);
- Bushen Jianpi Migu prescription versus Caltrate after three months treatment (MD 0.10 μmol s^{-1}/L; 95% CI 0.01 to 0.19) (Analysis 3.8) (Wang ZK 2004);

- Liuwei Dihuang pills versus calcium after six months treatment (MD 0.43 μmol s^{-1}/L; 95% CI 0.11 to 0.75) (Analysis 3.8) (Zhang J 2003);
- TPF capsule versus calcium granule after six months treatment (MD 3.84 μmol s^{-1}/L; 95% CI 2.53 to 5.15) (Analysis 3.8) (Zhang YL 1996);
- Gushen Yijing tang versus Caltrate after six months treatment (MD 2.17 μmol s^{-1}/L; 95% CI 0.73 to 3.61) (Analysis 3.8) (Zhong RQ 2007);
- Jiangu capsule versus Caltrate after 12 months treatment (MD 2.04 μmol s^{-1}/L; 95% CI 1.32 to 2.76) (Analysis 3.8) (Wang YZ 2008);
- Jingujian granule versus Caltrate after three months treatment (MD 2.40 μmol s^{-1}/L; 95% CI 2.21 to 2.59) (Analysis 3.8) (Li YH 2010);
- Qianggu paste versus calcium gluconate tablets after six months treatment (MD 3.60 μmol s^{-1}/L; 95% CI 2.86 to 4.34) (Analysis 3.8) (Wang H 2007);
- Bushen Yangxue tang versus calcium gluconate after six months treatment (MD 2.62 μmol s^{-1}/L; 95% CI 0.84 to 4.40) (Analysis 3.8) (Zhan ML 2007).

Seven trials showed no significant effects of herbal treatments on alkaline phosphatase when compared to conventional western medicines:
- Gukang oral liquid versus alendronate sodium tablets after six months treatment (MD -1.06 μmol s^{-1}/L; 95% CI -2.54 to 0.42) (Analysis 3.8) (Shao M 2003);
- Kanggusong granule versus ipriflavone after three months treatment (MD 0.13 μmol s^{-1}/L; 95% CI -0.07 to 0.33) (Analysis 3.8) (Wu MS 2001);
- Huangqi Sanxian tang versus nilestriol after three months treatment (MD -0.03 μmol s^{-1}/L; 95% CI -1.14 to 1.08) (Analysis 3.8) (Zhou ZK 2006);
- Gukang oral liquid versus alendronate sodium tablets after six months treatment (MD 0.48 μmol s^{-1}/L; 95% CI -0.34 to 1.30) (Analysis 3.8) (Wang JM 2008);
- Jianshenfang granule versus alendronate sodium tablets after six months treatment (MD 0.33 μmol s^{-1}/L; 95% CI -2.78 to 3.44) (Analysis 3.8) (Li BL 2007);
- Bushen Zhuanggu tang versus alendronate sodium tablets after three months treatment (MD -0.11 μmol s^{-1}/L; 95% CI -0.99 to 0.77) (Analysis 3.8) (Ling JY 2008);
- Gusong recipe versus alendronate sodium tablets after five months treatment (MD -1.05 μmol s^{-1}/L; 95% CI -2.86 to 0.76) (Analysis 3.8) (Xiao W 2008).

Another three trials showed a worse effect of herbal treatments when compared to calcium supplementation, hormones or alendronate sodium tablets:
- Shenyao capsules versus Caltrate after six months treatment (MD -2.40 μmol s^{-1}/L; 95% CI -3.58 to -1.22) (Analysis 3.8) (Chen NQ 2006);
- Yinyanghuo versus conjugated oestrogens after three to six months treatment (MD -7.00 μmol s^{-1}/L; 95% CI -11.17 to -2.83) (Analysis 3.8) (Zhao LN 2003);
- Bushen Jianpi Huoxue recipe versus alendronate sodium tablets after six months treatment (MD -2.94 μmol s^{-1}/L; 95% CI -4.34 to 1.54) (Analysis 3.8) (He MT 2007).

Bone Gla protein (BGP) levels

One trial found that there was a significant difference in BGP between Chinese herbal and western medicines:
- Acupoint sticking of Migudan versus oyster shell calcium chewable tablets after three months treatment (MD 1.55 μg/L; 95% CI 1.24 to 1.86) (Analysis 3.9) (Xu YL 2007).

Three trials showed a statistically significantly better effect on BGP when compared with calcium supplementation:
- Bushen Huoxue capsule versus Caltrate plus Rocalirol after 12 months treatment (MD 0.93 μg/L; 95% CI 0.35 to 1.51) (Analysis 3.9) (Zhang XJ 2008);
- Kanggusong capsule versus Caltrate after six months treatment (MD 1.78 μg/L; 95% CI 0.40 to 3.16) (Analysis 3.9) (Wei RY 2011);
- Liuwei Dihuang pills versus calcium after 12 months treatment (MD 17.90 μg/L; 95% CI 12.43 to 23.37) (Analysis 3.9) (Zhang J 2003).

Three trials showed no significant effects of herbal treatments on BGP when compared to western medicines:

- Gukang oral liquid versus alendronate after six months treatment (MD -0.10 μg/L; 95% CI -0.93 to 0.73) (Analysis 3.9) (Shao M 2003);
- Jianshenfang granule versus alendronate sodium tablets after six months treatment (MD 0.49 μg/L; 95% CI -1.59 to 2.57) (Analysis 3.9) (Li BL 2007);
- Jiangu recipe versus alendronate sodium tablets after 12 months treatment (MD 1.81 μg/L; 95% CI -0.31 to 3.93) (Analysis 3.9) (Qiu RB 2008).

Five trials showed no significant effects of herbal treatments when compared with calcium supplementation:

- Strong Bone capsule versus Caltrate after three months treatment (MD -0.49 μg/L; 95% CI -2.17 to 1.19) (Analysis 3.9) (Cui TH 1999);
- Yanghuo Sanzitang versus Caltrate after six months treatment (MD 2.71 μg/L; 95%CI -0.30 to 5.72) (Analysis 3.9) (Qiu RB 2004);
- Shigu yin versus Caltrate after six months treatment (MD 0.80 μg/L; 95% CI -0.34 to 1.94) (Analysis 3.9) (Zhang YP 2007);
- Jingujian granule versus Caltrate after three months treatment (MD 2.53 μg/L; 95% CI -0.38 to 5.44) (Analysis 3.9) (Li YH 2008);
- Tongbu Qianggutang versus calcium plus vitamin D3 after three months treatment (MD -1.50 μg/L; 95% CI -5.07 to 2.08) (Analysis 3.9) (Zhou LZ 2001).

Another trial showed a worse effect of Bushen Jianpi Huoxue recipe when compared to alendronate sodium tablets after six months treatment (MD -2.13 μg/L; 95% CI -2.74 to -1.52) (Analysis 3.9) (He MT 2007).

Interleukin-6 (IL-6) levels

There was no significant difference between herbal drugs and western medicine in interleukin-6 in three trials:

- Bushen Jianpi Huoxue recipe versus alendronate sodium tablets after six months treatment (MD -5.72 pg/ml; 95% CI -14.05 to 2.61) (Analysis 3.10) (He MT 2007);
- Gukang oral liquid versus alendronate sodium tablets after six months treatment (MD -3.50 pg/ml; 95% CI -15.93 to 8.93) (Analysis 3.10) (Shao M 2003);
- Jianshenfang granule versus alendronate sodium tablets after six months treatment (MD -12.56 pg/ml; 95% CI -29.26 to 4.14) (Analysis 3.10) (Li BL 2007).

Three trials showed statistically significantly better effects on interleukin-6:

- Jiangu recipe versus alendronate sodium tablets after 12 months treatment (MD -19.99 pg/ml; 95% CI -30.92 to -9.06) (Analysis 3.10) (Qiu RB 2008);
- Yanghuo Sanzi tang versus Caltrate after six months treatment (MD -20.29 pg/ml; 95% CI -35.67 to -4.91) (Analysis 3.10) (Qiu RB 2004);
- Bushen Huoxue capsule versus Caltrate plus Rocalirol (MD -18.70 pg/ml; 95% CI -34.16 to -3.24) (Analysis 3.10) (Zhang XJ 2008).

Parathyroid hormone (PTH) levels

Four trials showed no significant effects of herbal treatments on PTH when compared to common western medicines:

- prescription for tonifying kidney versus ipriflavone (MD -13.00 μg/L; 95% CI -41.67 to 15.67), kidney meridian sticking versus ipriflavone (MD -13.01 μg/L; 95% CI -41.95 to 15.93), urinary bladder meridian sticking versus ipriflavone (MD -3.01 μg/L; 95% CI -31.44 to 25.42), Gushukang granule versus ipriflavone (MD -3.02 μg/L; 95% CI -30.91 to 24.87) after six months treatment (Analysis 3.11) (Wu MS 2007);
- Kanggusong granule versus ipriflavone after three months treatment (MD 11.81 μg/L; 95% CI -14.64 to 38.26) (Analysis 3.11) (Wu MS 2001);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet after six months treatment (MD -10.63 μg/L; 95% CI -140.92 to 119.66) (Analysis 3.11) (Xie YM 1997);
- Gujian capsule versus alfacalcidol after six months treatment (MD -22.57 pg/ml; 95% CI -60.92 to 15.78) (Analysis 3.11) (Meng XD 2003);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD -2.06 pg/ml; 95% CI -6.74 to 2.62) (Analysis 3.11) (Ou L 2011).

In another trial, TPF capsule showed a better effect than calcium granule after six months treatment (MD -254.00 pg/ml; 95% CI -399.06 to -108.94) (Analysis 3.11) (Zhang YL 1996).

Calcitonin (CT) levels

Five trials showed no significant effects of herbal treatments on calcitonin when compared to common western medicines:

- prescription for tonifying kidney versus ipriflavone (MD 0.96 ng/L; 95% CI -3.71 to 5.63), kidney meridian sticking versus ipriflavone (MD -1.01 ng/L; 95% CI -5.44 to 3.42), urinary bladder meridian sticking versus ipriflavone (MD -0.01 ng/L; 95% CI -4.68 to 4.66), Gushukang granule versus ipriflavone (MD -0.01 ng/L; 95% CI -4.44 to 4.42) after six months treatment (Analysis 3.12) (Wu MS 2007);
- Bugu Shengsui capsule versus vitamin D2 plus calcium tablet (MD 15.93 ng/L; 95% CI -24.16 to 56.02) (Analysis 3.12) (Xie YM 1997);
- Tongbu Qianggutang versus calcium plus vitamin D3 after three months treatment (MD -6.18 ng/L; 95% CI -12.89 to 0.52) (Analysis 3.12) (Zhou LZ 2001);
- Gujian capsule versus alfacalcidol after six months treatment (MD -12.77 ng/L; 95% CI -70.92 to 45.38) (Analysis 3.12) (Meng XD 2003);
- Radix rehmanniae preparata and Radix astragali versus calcium carbonate tablets after six months treatment (MD 0.11 ng/L; 95% CI -0.04 to 0.26) (Analysis 3.12) (Ou L 2011).

Three trials showed a statistically significantly better effect on calcitonin when compared with calcium supplementation:

- Strong Bone capsule versus Caltrate after three months treatment (MD 16.25 ng/L; 95% CI 10.43 to 22.07) (Analysis 3.12) (Cui TH 1999);
- Jingujian granule versus Caltrate after three months treatment (MD 21.98 ng/L; 95% CI 17.01 to 26.95) (Analysis 3.12) (Li YH 2010)
- TPF capsule versus calcium granule after six months treatment (MD 17.71 ng/L; 95% CI 11.53 to 23.89) (Analysis 3.12) (Zhang YL 1996).

Chinese herbal medicines plus western medicine versus western medicine (Comparison 04)

Oestradiol (E2) levels

Eight trials showed positive effects of Chinese herbal medicines plus western medicine treatments on E2 when compared to the same western medicines:

- Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol after six months treatment (MD 4.54 pg/ml; 95% CI 0.47 to 8.61) (Analysis 4.6) (Chen FS 2001);
- Shugan zishen huoxue tang plus Caltrate and alendronate sodium tablets versus Caltrate and alendronate sodium tablets after six months treatment (MD 26.99 pg/ml; 95% CI 18.44 to 35.54) (Analysis 4.6) (Han XL 2007);
- Ziyin Bushen Zhuanggu prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin after eight months treatment (MD 23.21 pg/ml; 95% CI 14.46 to 31.96) (Analysis 4.6) (Li HW 2004);
- Zhuanggu capsule plus Caltrate versus Caltrate after six months treatment (MD 4.06 pg/ml; 95% CI 2.56 to 5.56) (Analysis 4.6) (Li SL 2004);
- Antai capsule plus Caltrate versus Caltrate after six months treatment (MD 11.00 pg/ml; 95% CI 8.14 to 13.86) (Analysis 4.6) (Wang SW 2003);
- Zishen prescription plus Caltrate and calcitonin versus Caltrate plus calcitonin (MD 23.21 pg/ml; 95% CI 14.46 to 31.96) (Analysis 4.6) (Zhao G 2002);
- Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate after 48 weeks treatment (MD 6.04 pg/ml; 95% CI 4.61 to 7.47) (Analysis 4.6) (Zhang XZ 2004);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 40.85 pg/ml; 95% CI 33.61 to 48.09) (Analysis 4.6) (Zhang RH 2004).

Compared with Caltrate alone, Bushen Qiangshen pill plus Caltrate did not have significant effect on oestradiol (MD 7.60 pg/ml; 95% CI -0.51 to 15.71) (Analysis 4.6) (Mu G 2001).

Serum calcium (Ca) levels

Three trials showed positive effects of Chinese herbal medicines plus western medicine treatments on calcium when compared to the same western medicines:

- Bushenyiqihuoxue soup plus tamoxifen and Caltrate versus tamoxifen and Caltrate after three months treatment (MD 0.37 mmol/L; 95% CI 0.32 to 0.42) (Analysis 4.7) (Zhang DS 2011);
- Chinese medicine (combinations of 10 herbs) plus tamoxifen and Caltrate versus tamoxifen and Caltrate after three months treatment (MD 0.37 mmol/L; 95% CI 0.32 to 0.42) (Analysis 4.7) (Cao W 2010);
- Huangqi plus Caltrate versus Caltrate after six months treatment (MD 0.28 mmol/L; 95% CI 0.11 to 0.45) (Analysis 4.7) (Yang B 2007).

While Yigu capsule plus calcium versus placebo plus calcium had a negative effect on calcium after six months treatment (MD -0.07 mmol/L; 95% CI -0.13 to -0.01) (Analysis 4.7) (Zhang RH 2004).

Eight trials did not show positive effects of herbal treatments plus western medicines when compared to the same western medicines:

- Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol after six months treatment (MD 0.05 mmol/L; 95% CI -0.02 to 0.12) (Analysis 4.7) (Chen FS 2001);
- Gushukang granule plus Calcium carbonate with vitamin D chewable tablets versus Calcium carbonate with vitamin D chewable tablets after six months treatment (MD -0.01 mmol/L; 95% CI -0.09 to 0.07) (Analysis 4.7) (Chen ZX 2002);
- Zhuanggu capsule plus Caltrate versus Caltrate after six months treatment (MD 0.01 mmol/L; 95% CI -0.07 to 0.09) (Analysis 4.7) (Li SL 2004);
- Yiyuanjiangu decoction plus calcitonin ampoule and calcium carbonate tablet versus calcitonin ampoule and calcium carbonate tablet after three months treatment (MD -0.02 mmol/L; 95% CI -0.06 to 0.02) (Analysis 4.7) (Ma CZ 2011);
- Antai capsule plus Caltrate versus Caltrate after six months treatment (MD -0.03 mmol/L; 95% CI -0.09 to 0.03) (Analysis 4.7) (Wang SW 2003);
- Jinwugutong capsule plus calcium versus placebo plus calcium after six months treatment (MD -0.05 mmol/L; 95% CI -0.11 to 0.01) (Analysis 4.7) (Zheng WK 2007);
- Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate after three months treatment (MD 0.03 mmol/L; 95% CI -0.09 to 0.15) (Analysis 4.7) (Dong Y 2010)
- Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin ampoule versus calcitonin ampoule after 12 months treatment (MD -0.02 mmol/L; 95% CI -0.10 to 0.06) (Analysis 4.7) (Zhang ZF 2011).

Phosphorus (P) levels

Nine trials did not show positive effects of herbal treatments plus western medicines when compared to the same western medicines:

- Gushen decoction plus Caltrate and Alfacalcidol versus Caltrate and Alfacalcidol (MD -0.13 mmol/L; 95% CI -0.27 to 0.01) (Analysis 4.8) (Chen FS 2001);
- Gushukang granule plus Calcium carbonate with vitamin D chewable tablets versus Calcium carbonate with vitamin D chewable tablets after six months treatment (MD -0.02 mmol/L; 95% CI -0.11 to 0.07) (Analysis 4.8) (Chen ZX 2002);
- Zhuanggu capsule plus Caltrate versus Caltrate (MD 0.01 mmol/L; 95% CI -0.06 to 0.08) (Analysis 4.8) (Li SL 2004);
- Yiyuanjiangu decoction plus calcitonin ampoule and calcium carbonate tablet versus calcitonin ampoule and calcium carbonate tablet after three months treatment (MD 0.06 mmol/L; 95% CI -0.22 to 0.34) (Analysis 4.8) (Ma CZ 2011);
- Antai capsule plus Caltrate versus Caltrate (MD -0.01 mmol/L; 95% CI -0.23 to 0.21) (Analysis 4.8) (Wang SW 2003);
- Jinwugutong capsule plus calcium versus placebo plus calcium after six months treatment (MD -0.02 mmol/L; 95% CI -0.09 to 0.05) (Analysis 4.8) (Zheng WK 2007);
- Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate after three months treatment (MD 0.01 mmol/L; 95% CI -0.12 to 0.14) (Analysis 4.8) (Dong Y 2010);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD -0.03 mmol/L; 95% CI -0.08 to 0.02) (Analysis 4.8) (Zhang RH 2004);
- Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin ampoule versus calcitonin ampoule after 12 months treatment (MD -0.02 mmol/L; 95% CI -0.08 to 0.04) (Analysis 4.8) (Zhang ZF 2011).

Alkaline phosphatase (ALP) levels

Seven trials did not show significant effects of herbal treatments plus western medicines on alkaline phosphatase levels when compared to the same western medicines:

- Gushukang granule plus Calcium carbonate with vitamin D chewable tablets versus Calcium carbonate with vitamin D chewable tablets after six months treatment (MD -0.50 μmol s^{-1}/L; 95% CI -1.70 to 0.70) (Analysis 4.9) (Chen ZX 2002);
- Zhuanggu capsule plus Caltrate versus Caltrate after six months treatment (MD 0.00 μmol s^{-1}/L; 95% CI -1.55 to 1.55) (Analysis 4.9) (Li SL 2004);
- Yiyuanjiangu decoction plus calcitonin ampoule and calcium carbonate tablet versus calcitonin ampoule and calcium carbonate tablet after three months treatment (MD 0.31 μmol s^{-1}/L; 95% CI -0.48 to 1.10) (Analysis 4.9) (Ma CZ 2011);
- Bushen Qiangshen pill plus Caltrate versus Caltrate after three months treatment (MD -0.31 μmol s^{-1}/L; 95% CI -1.72 to 1.10) (Analysis 4.9) (Mu G 2001);
- Jinwugutong capsule plus calcium versus placebo plus calcium after six months treatment (MD 1.01 μmol s^{-1}/L; 95% CI -0.04 to 2.06) (Analysis 4.9) (Zheng WK 2007);
- Chinese medicine (combinations of 10 herbs) plus tamoxifen and Caltrate versus tamoxifen and Caltrate after three months treatment (MD -0.26 μmol s^{-1}/L; 95% CI -1.64 to 1.12) (Analysis 4.9) (Cao W 2010);
- Zhuangguqiangjin tablet and Shujinbogu tablet plus calcitonin ampoule versus calcitonin ampoule after 12 months treatment (MD 0.08 μmol s^{-1}/L; 95% CI -0.54 to 0.70) (Analysis 4.9) (Zhang ZF 2011).

Six trials showed that herbal drugs plus western medicine could increase the alkaline phosphatase level when compared with the same western medicine:

- Antai capsule plus Caltrate versus Caltrate regarding alkaline phosphatase before and after six months treatment (MD 1.28 μmol s^{-1}/L; 95% CI 0.55 to 2.01) (Analysis 4.9) (Wang SW 2003);
- Chinese decoction plus calcium gluconate versus calcium gluconate after nine months treatment (MD 1.77 μmol s^{-1}/L; 95% CI 1.20 to 2.34) (Analysis 4.9) (Miu JQ 2008);
- Bushenyiqihuoxue soup plus tamoxifen and Caltrate versus tamoxifen and Caltrate after three months treatment (MD 3.54 μmol s^{-1}/L; 95% CI 1.68 to 5.40) (Analysis 4.9) (Zhang DS 2011);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 1.73 μmol s^{-1}/L; 95% CI 0.71 to 2.75) (Analysis 4.9) (Zhang RH 2004);
- Huangqi plus Caltrate versus Caltrate after six months treatment (MD 0.82 μmol s^{-1}/L; 95% CI 0.63 to 1.01) (Analysis 4.9) (Yang B 2007);
- Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate after 48 weeks (MD 10.48 μmol s^{-1}/L; 95% CI 9.81 to 11.15) (Analysis 4.9) (Zhang XZ 2004).

Two trials showed the opposite effect:

- Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate after three months treatment (MD -0.99 μmol s^{-1}/L; 95% CI -1.52 to -0.46) (Analysis 4.9) (Dong Y 2010);
- Kanggusong soup plus Caltrate versus Caltrate after three months treatment (MD -1.61 μmol s^{-1}/L; 95% CI -3.17 to -0.05) (Analysis 4.9) (Li ZP 2011).

Bone Gla protein (BGP) levels

One trial showed a better effect of herbal drugs plus western medicine:

- Zhuanggu capsule plus Caltrate versus Caltrate (MD -2.30 μg/L; 95% CI -4.07 to -0.53) (Analysis 4.10) (Li SL 2004).

Seven trials showed a worse effect of herbal drugs plus western medicine:

- Traditional Chinese capsule plus calcium gluconate versus calcium gluconate after nine months treatment (MD 1.23 μg/L; 95% CI 0.88 to 1.58) (Analysis 4.10) (Miu JQ 2008);
- Jinwugutong capsule plus calcium versus placebo plus calcium after six months treatment (MD 2.47 μg/L; 95% CI 1.44 to 3.50) (Analysis 4.10) (Zheng WK 2007);
- Yigu capsule plus calcium versus placebo plus calcium after six months treatment (MD 2.60 μg/L; 95% CI 1.66 to 3.54) (Analysis 4.10) (Zhang RH 2004);
- Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate after 48 weeks treatment (MD 6.24 μg/L; 95% CI 5.69 to 6.79) (Analysis 4.10) (Zhang XZ 2004);
- Xianlinggubao capsules plus Caltrate versus Caltrate after 12 months treatment (MD 1.85 μg/L; 95% CI 0.87 to 2.83) (Analysis 4.10) (Wu W 2005);

- Huangqi plus Caltrate versus Caltrate after six months treatment (MD 0.63 μg/L; 95% CI 0.50 to 0.76) (Analysis 4.10) (Yang B 2007).

There was no significant difference between Xianlinggubao capsule plus salmon calcitonin and Caltrate versus salmon calcitonin plus Caltrate after three months treatment (MD 0.56 μg/L; 95% CI -0.30 to 1.42) (Analysis 4.10) (Dong Y 2010).

Interleukin-6 (IL-6) levels

Three trials showed a better effect of herbal drugs plus western medicine on interleukin-6:

- Erxian Yanggu tang plus alendronate sodium tablets versus alendronate sodium tablets (MD -16.18 pg/ml; 95% CI -19.62 to -12.74) (Analysis 4.11) (Huang JW 2008);
- Kanggusong soup plus Caltrate versus Caltrate after three months treatment (MD -16.32 pg/ml; 95% CI -31.60 to -1.04) (Analysis 4.11) (Li ZP 2011);
- Xianlinggubao capsule plus vitamin D3 and calcium amino acid chelate versus vitamin D3 and calcium amino acid chelate after 48 weeks treatment (MD -133.30 pg/ml; 95% CI -139.94 to -126.66) (Analysis 4.11) (Zhang XZ 2004).

HISTORY

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Review first published: Issue 3, 2014

Date	Event	Description
26 August 2008	Amended	Converted to new review format. C041-R

CONTRIBUTIONS OF AUTHORS

Y Liu: drafted the protocol, developed the search strategy, selected trials, assessed trial quality, extracted data, performed data analyses and drafted the review.

Y Xia: updated the searches and selected trials, assessed trial quality, extracted data, performed data analyses and co-developed the review.

JP Liu: conceived the study, revised the protocol and the review, provided a methodological perspective and performed data analyses.

DECLARATIONS OF INTEREST

We certify that we have no affiliations with or involvement in any organisation or entity with a direct financial interest in the subject matter of the review (e.g. employment, consultancy, stock ownership, honoraria, expert testimony).

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Chinese diagnostic criteria for osteoporosis were added, besides the WHO criteria, as many trials used the Chinese criteria (these were adapted from the WHO criteria).

INDEX TERMS

Medical Subject Headings (MeSH)

Bone Density Conservation Agents [therapeutic use]; Drugs, Chinese Herbal [*therapeutic use]; Osteoporosis [*drug therapy]; Phytotherapy [*methods]; Randomized Controlled Trials as Topic

MeSH check words

Humans