Cochrane Library

Cochrane Database of Systematic Reviews

Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS) (Review)

Liu X, Zhang M, He L, Li Y

Liu X, Zhang M, He L, Li Y.
Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS).
Cochrane Database of Systematic Reviews 2012, Issue 10. Art. No.: CD004882.
DOI: 10.1002/14651858.CD004882.pub3.

www.cochranelibrary.com

WILEY

TABLE OF CONTENTS

[Intervention Review]

Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS)

Xuemei Liu[1], Mingming Zhang[2], Lin He[3], Youping Li[2]

[1]Chinese Cochrane Centre, Chinese Journal of Evidence-Based Medicine, West China Hospital, Sichuan University, Chengdu, China. [2]Chinese Cochrane Centre, Chinese Evidence-Based Medicine Centre, West China Hospital, Sichuan University, Chengdu, China. [3]Books & Information Centre, West China Hospital, Sichuan University, Chengdu, China

Contact address: Youping Li, Chinese Cochrane Centre, Chinese Evidence-Based Medicine Centre, West China Hospital, Sichuan University, No. 37, Guo Xue Xiang, Chengdu, Sichuan, 610041, China. yzmylab@hotmail.com.

Editorial group: Cochrane Acute Respiratory Infections Group
Publication status and date: New search for studies and content updated (no change to conclusions), published in Issue 10, 2012.

Citation: Liu X, Zhang M, He L, Li Y. Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS). *Cochrane Database of Systematic Reviews* 2012, Issue 10. Art. No.: CD004882. DOI: 10.1002/14651858.CD004882.pub3.

ABSTRACT

Background

Severe acute respiratory syndrome (SARS) is an acute respiratory disease caused by a novel coronavirus, which first appeared in Foshan City, China on 22 December 2002. Chinese herbs were used in its treatment.

Objectives

To evaluate the possible effectiveness and safety of Chinese herbs combined with Western medicines versus Western medicines alone for SARS patients.

Search methods

We searched CENTRAL 2012, Issue 3, MEDLINE (1966 to February Week 4, 2012), EMBASE (1990 to March 2012) and the Chinese Biomedical Literature (Issue 3, 2012).

Selection criteria

Randomised controlled trials (RCTs) and quasi-RCTs of Chinese herbs combined with Western medicines versus Western medicines alone for patients diagnosed with SARS.

Data collection and analysis

Two review authors (XL, MZ) independently extracted trial data. We extracted dichotomous and continuous data with 95% confidence intervals (CI). For dichotomous data, we used risk ratio (RR). For continuous data, we calculated mean differences (MD). We calculated overall results based on the random-effects model if heterogeneity existed between studies. If no heterogeneity was detected between the studies, we used the fixed-effect model. We used the Z score and the Chi^2 test with significance being set at $P < 0.05$ to test heterogeneity. No severe adverse events were reported.

Main results

We included 12 RCTs and one quasi-RCT. A total of 640 SARS patients and 12 Chinese herbs were identified. We did not find Chinese herbs combined with Western medicines decreased mortality versus Western medicines alone. Two herbs may improve symptoms. Five herbs may improve lung infiltrate absorption. Four herbs may decrease the dosage of corticosteroids. Three herbs may improve the quality of life of SARS patients. One herb may shorten the length of hospital stay.

Authors' conclusions

Chinese herbs combined with Western medicines made no difference in decreasing mortality versus Western medicines alone. It is possible that Chinese herbs combined with Western medicines may improve symptoms, quality of life and absorption of pulmonary infiltration, and decrease the corticosteroid dosage for SARS patients. The evidence is weak because of the poor quality of the included trials. Long-term follow-up of these included trials is needed.

PLAIN LANGUAGE SUMMARY

Chinese herbs combined with Western medicine for treating severe acute respiratory syndrome (SARS)

Severe acute respiratory syndrome (SARS) is an acute respiratory disease, characterised by influenza-like (flu-like) symptoms, which first appeared in 2002. SARS is a rapidly progressive, acute, community-acquired respiratory illness, which spreads to all contacts. Integrated Chinese and Western medicines played an important role in the treatment of SARS and this review assessed the effectiveness and safety of this integrated treatment approach. Among 5327 confirmed cases, 3104 patients received traditional Chinese medicine. We explored the role of Chinese herbs in treating SARS to offer an effective method for SARS treatment.

We identified 12 randomised controlled trials (RCTs) and one quasi-RCT involving 640 SARS patients. Clinical evidence shows that integrated Western and Chinese medicine does not decrease the mortality rate. It is possible that different Chinese herbs combined with Western medicines may improve symptoms, quality of life and absorption of pulmonary infiltration, and decrease corticosteroid dosage. No severe adverse events were identified. The evidence is weak because of the poor quality of the included trials.

BACKGROUND

Description of the condition

Severe acute respiratory syndrome (SARS) is an acute respiratory disease, which first appeared in Foshan City, China on 22 December 2002. The primary clinical manifestations of SARS are characterised by influenza-like (flu-like) symptoms. In addition to fever, cough and breathing difficulties, SARS may be associated with other symptoms such as headache, muscular stiffness and pain, loss of appetite, malaise, chills, confusion, dizziness, rash, night sweats, nausea and diarrhoea. SARS is a rapidly progressive, acute, community-acquired respiratory illness, which spreads to all contacts.

By 24 June 2003, SARS had spread throughout China and 33 other countries and regions. The global death toll of SARS stood at 916 out of more than 8422 cases reported. Mortality was about 11%. There were a total of 1755 SARS cases reported in Hong Kong, China. On mainland China, 5327 cases of SARS, with 349 deaths were reported. The morbidity rate was about 7%. The Hong Kong Special Administrative Region reported 300 deaths, with a mortality rate of about 17%. There were 655 SARS cases in Taiwan with 180 deaths. The mortality rate was 27% (WHO 2003). The case fatality ratio was estimated to be less than 1% in people aged 24 years or younger; 6% in people aged between 25 to 44 years; 15% in people aged between 45 to 64 years; and greater than 50% in people aged 65 years and older (http://www.who.int/csr/sarsarchive/2003_05_07a/en/).

SARS is known to be caused by a new coronavirus, first identified by researchers in Hong Kong, the United States and Germany (Drosten 2003; Ksiazek 2003; Peiris 2003; Poutanen 2003). The virus was provisionally termed SARS-associated corona virus (SARS-CoV). Chinese clinicians diagnosed SARS by using the standard clinical diagnosis, issued by the Chinese Ministry of Health without the laboratory indexes (MoH 2003). The World Health Organization (WHO) diagnosed SARS patients using the standard clinical diagnosis, plus virus and antibody detection (WHO 2003).

Description of the intervention

There are many different Western treatment regimens with variations in dosage and duration of the same drug for the same stage of SARS. For example, the dose and duration of glucocorticoids for the same type and stage of SARS differed not only between hospitals in China, but also between countries. SARS patients received supportive therapy, such as maintaining oxygenation - intubation and ventilation as required. WHO recommended antibiotic therapy to cover common organisms associated with community-acquired pneumonia (including atypical pneumonia). In severe cases, corticosteroids and ribavirin (an antiviral drug) were used. A systematic review of Western medicine for SARS showed that it was difficult to identify the benefit of Western medicine for SARS (Stockman 2006). In this review, Western medicines included antibiotics such as moxifloxacin and azithromycin; antiviral drugs such as ribavirin and an interferon; glucocorticosteroids or methylprednisolone; and thymosin or human immunoglobulin.

Chinese herbal therapies include single herbs, Chinese proprietary medicines and mixtures of different herbs. Any one of these three types can be combined with Western medicines. Chinese proprietary medicines are usually based on well-established and long-standing formulations, made into tablets or capsules for convenience and palatability. The mixture of herbs prescribed by Chinese herbalists depends upon the different symptoms according to Chinese diagnostic patterns (inspection, listening, smelling, inquiry and palpation) (Liu 2003). In this review, Chinese herbs are defined as either raw or refined products derived from plants or parts of plants (for example, leaves, stems, buds, flowers, roots or tubers) used for treating diseases (Liu 2002). The synonyms of herbal medicines include herbal remedies, herbal medications, herbal products, herbal preparations, medicinal herbs and phytopharmaceuticals. The elements of Chinese herbs are listed in Table 1.

How the intervention might work

Fever is the main symptom of SARS. During the early fever stage, Chinese herbs may reduce body temperature. Chinese herbs may also improve the immunity of SARS patients. In the early stage, Chinese herbal treatment could promote blood circulation and help reduce endotoxin absorption in the intestinal tract to protect the organs from damage by the SARS virus.

High doses of corticosteroids may induce serious disease (such as avascular necrosis of the femoral head) and cause complications such as secondary infections, secondary haemorrhage and adverse events. Use of Chinese herbs could result in a decreased need for corticosteroids which would reduce the potential complications and adverse events.

Why it is important to do this review

Chinese herbs played an important role in the treatment of SARS. Among 5327 confirmed SARS patients, 3104 cases received traditional Chinese medicine (TCM) including Chinese herbs (Yu 2003). This is the first systematic review to examine empirical evidence of the benefits and risks of TCM combined with Western medicines for treating SARS patients.

OBJECTIVES

To examine the possible effectiveness and safety of Chinese herbs combined with Western medicines for SARS patients.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCTs) and quasi-RCTs of Chinese herbs combined with Western medicines versus Western medicines only for SARS patients. We analysed RCTs and quasi-RCTs separately.

Types of participants

SARS cases diagnosed by standard WHO diagnostic guidelines or by the Chinese Ministry of Health's guidelines were included. SARS cases complicated with other illnesses such as diabetes, cardiovascular disease, hypertension or cancer were excluded. Misdiagnosed SARS cases using WHO diagnostic criteria (WHO 2003) were also excluded.

Types of interventions

We included trials comparing Chinese herbs combined with Western medicines versus Western medicines only for SARS patients. We excluded trials comparing Western medicines versus other Western medicines only.

Types of outcome measures

We assessed primary and secondary outcome measures at the end of treatment and/or at the end of follow-up.

Primary outcomes

1. Mortality.

Secondary outcomes

1. Days to loss of fever.
2. Symptom score: symptoms included fever, fatigue, cough, poor appetite, cardiopalmus, insomnia, perspiration, constipation, diarrhoea, dry mouth, etc. Symptoms were scored as follows: no symptom = 0 point; mild symptoms = 1 point; moderate symptoms = 2 points; severe symptoms = 3 points. The sum of each symptom was the score used in this review.
3. Duration of each symptom.
4. Cases of absorption of pulmonary infiltration.
5. Duration of absorption of pulmonary infiltration.
6. Chest X-ray for absorption of pulmonary infiltration: the score was graded by the density and size of the chest X-ray shadow. A normal chest X-ray scored 0 points. The highest score for a chest X-ray was 38 points.
7. Average daily dose of corticosteroid.
8. Dosage of corticosteroid at the end of treatment.
9. Duration of corticosteroid treatment.
10. Quality of life: quality of life was evaluated using the scale produced by the SARS project. This scale included 16 items involving three topics: the limit of normal activity, dyspnoea and emotional status. Each item was graded from one to five. The poorest quality of life scored five points, the highest quality of life scored one point. The sum of each item was the total score for quality of life.
11. Number of days in hospital.
12. Adverse events.

Search methods for identification of studies

Electronic searches

For this updated review we searched the Cochrane Central Register of Controlled Trials (CENTRAL) 2012, Issue 3, part of *The Cochrane Library,* www.thecochranelibrary.com (accessed 26 March 2012), which contains the Acute Respiratory Infection Group's Specialised Register, MEDLINE (1966 to February Week 4, 2012), EMBASE (1990 to March 2012), CINAHL (1981 to March 2012) and the Chinese Biomedical Literature (Issue 3, 2012). See Appendix 1 for details of the original search.

We used the following search strategy to search MEDLINE and CENTRAL. We did not combine the MEDLINE search strategy with a filter to identify randomised controlled trials as there were too few results. We adapted the search terms for EMBASE (Appendix 2), CINAHL (Appendix 3) and the Chinese Biomedical Literature (Appendix 4).

We searched WHO ICTRP http://www.who.int/ictrp and the Clinical Trials database www.clinicaltrials.gov on 31 March 2012.

MEDLINE (OVID)

1 Severe Acute Respiratory Syndrome/
2 (severe acute respiratory syndrome or SARS).tw.
3 SARS Virus/
4 acute respiratory syndrome.tw.
5 or/1-4
6 Drugs, Chinese Herbal/
7 Medicine, Chinese Traditional/
8 Medicine, East Asian Traditional/
9 Plants, Medicinal/
10 chinese herb*.tw.
11 (chinese adj2 medicin*).tw.
12 or/6-11
13 5 and 12

Searching other resources

We searched reference lists of relevant trials and reviews. We also searched the Chinese Cochrane Center database of RCTs and controlled clinical trials. We manually handsearched journals not included in the Chinese Cochrane Center Database after 1 December 2001.

1. *Chinese Journal of Surgery of Integrated Traditional and Western Medicine* (issue 2, 2003 to issue 1, 2012).
2. *Chinese Journal of Integrated Traditional and Western Medicine in Intensive and Critical Care* (issue 4, 2003 to issue 1, 2012).
3. *Foreign Medical Sciences of Traditional Chinese Medicine Section* (2002 to issue 1, 2012).
4. *Chinese Traditional and Herbal Drugs* (issue 4, 2003 to issue 1, 2012).
5. *The Practical Journal of Integrating Chinese Medicine* (issue 4, 2003 to issue 1, 2012).
6. *Journal of Practical Traditional Chinese Medicine* (issue 4, 2003 to issue 1, 2012).
7. *Research of Traditional Chinese Medicine* (2002 to issue 1, 2012).

We contacted authors of included literature and relevant specialists for additional trials.

We manually searched other grey literature such as conference proceedings and academic degree dissertations.

1. *Proceedings of International Science Symposium on SARS* (July 1st Edition. Beijing: Ministry of Science and Technology, Ministry of Education, Ministry of Health, Beijing Municipal Government, Chinese Academy of Sciences, National Natural Science Foundation of China, Chinese Academy of Engineering, 2003).
2. *Symposium on treating SARS by Traditional Chinese Medicine* (July 1st Edition. Beijing: State Administration of Traditional Chinese Medicine People's Republic of China, 2003).
3. *Symposium on treating SARS by Integrated Traditional Chinese and Western medicine from Five Provinces in North China and*

Guangdong province (1st Edition. Beijing: Chinese Association of the integration of Traditional and Western Medicine, July, 2003).

We did not impose any language or publication restrictions.

Data collection and analysis

Selection of studies

Two review authors (XL, MZ) independently reviewed the titles, abstracts and keywords of all records retrieved to determine the studies to be assessed. We retrieved full articles for further assessment if the information given suggested that the study:

1. included SARS patients;
2. compared Chinese herbs combined with Western medicines with Western medicine for SARS;
3. used random allocation for the comparison groups.

A third review author (YL) acted as arbiter and resolved any differences in opinion.

Data extraction and management

Two review authors (XL, MZ) independently extracted data from each included trial using a standard extraction form, which included the following items.

1. General information: published/unpublished, language, authors, article title, journal title and year, volume, issue, page, funding source.
2. Design of the trial: prescribed size, generation of randomisation sequence, allocation concealment method, blinding information, statistical methods and attrition.
3. Participants: diagnostic criteria, total number and number in comparison groups, baseline characteristics, age, gender, inclusion criteria, exclusion criteria, study setting.
4. Intervention: type of herbs and Western medicine, the content of herbal formulas, duration, times, dose, co-intervention, control, withdrawals, drop out, loss to follow-up.
5. Outcome: all outcomes.
6. Conclusion: positive/negative.

Assessment of risk of bias in included studies

We assessed risk of bias following the recommendations in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We used a 'Risk of bias' table to assess the methodological quality of the trials.

1. Sequence generation: describes the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups. For example, digital table and computer sequence used to generate the allocation sequence is considered to be adequate randomisation. Sequence generated by treatment order is considered to be inadequate.
2. Allocation concealment: describes the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrolment. For example, randomisation sequence in an opaque envelope or a closed container is adequate allocation concealment. If the envelope is transparent, the doctor or the patient could see the sequence easily and it is inadequate.
3. Blinding of participants, personnel and outcome assessors. Assessments should be made for each main outcome (or class of outcomes): describes all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.
4. Incomplete outcome data. Assessments should be made for each main outcome (or class of outcomes): describes the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomised participants), reasons for attrition/exclusions where reported, and any re-inclusions in analyses performed by the review authors.
5. Selective outcome reporting: state how the possibility of selective outcome reporting was examined by the review authors, and what was found.
6. Other sources of bias: state any important concerns about bias not addressed in the other domains in the tool. If particular questions/entries were pre-specified in the review's protocol, responses should be provided for each question/entry.

Two review authors (XL, MZ) independently assessed each trial. We resolved disagreements by discussion.

Measures of treatment effect

We extracted both dichotomous data and continuous data with 95% confidence intervals (CIs). We used risk ratios (RR) for dichotomous data. We calculated mean differences (MD) for continuous data. We calculated overall results based on the random-effects model if heterogeneity existed between studies. If no heterogeneity was detected between studies, we used the fixed-effect model.

Unit of analysis issues

We analysed the data using Review Manager (RevMan 2011) software. We summarised data statistically if they were available and of sufficient quality and similarity. We performed meta-analyses within comparisons where individual trials compared the same trial intervention versus the same control intervention.

Dealing with missing data

We conducted analyses by intention-to-treat (ITT) where possible.

Assessment of heterogeneity

We tested heterogeneity using the Z score and the Chi^2 test with significance being set at $P < 0.1$. We planned to explore possible sources of heterogeneity by subgroup and sensitivity analysis as described below. We planned to test for publication bias using the funnel plot or other corrective analytical methods depending on the number of clinical trials included in the systematic review (Egger 1997).

Assessment of reporting biases

We handsearched journals, conference proceedings and academic degree dissertations which were not indexed by the databases we searched. If the statistical method in the original literature was

wrong, we extracted the raw data to calculate the value of RR (95% CI) or mean difference MD (85% CI).

Data synthesis

We calculated overall results based on the random-effects model if heterogeneity existed between trials. If no heterogeneity was detected between studies, we considered the fixed-effect model. Hypothesis tests used the Z test. We considered the results had achieved statistical significance if $P \leq 0.1$. If $P > 0.1$, we considered that the results had not achieved statistical significance. CIs were set at 95%.

Subgroup analysis and investigation of heterogeneity

If a sufficient number of RCTs were identified, we planned to perform a sensitivity analysis on each subgroup, according to methodological quality.

1. Different age groups (paediatric (less than 12 years old), adult (between 12 and 64 years old) and old age (over 65 years old)).
2. Different patient baseline data: patients with uncomplicated SARS versus complicated SARS.
3. Chinese herbs added at different disease stages: initial (acute) and remission (recovery stage). However, in this review we did not perform a sensitivity analysis. Please see the Results section for further information.

Sensitivity analysis

We had planned to perform sensitivity analyses in order to explore the influence of the following factors on effect estimates.

1. Repeating the analysis excluding unpublished studies (if there were any).
2. Repeating the analysis taking account of study quality, as specified above. However, in this review we did not perform a sensitivity analysis. Please see the Results section for further information.

RESULTS

Description of studies

Results of the search

The initial search of electronic databases and handsearching yielded 152 studies. After scanning the results, one quasi-RCT and 22 RCTs of Chinese herbs combined with Western medicines for SARS were identified, which appeared to meet the inclusion criteria. On closer inspection, 10 RCTs were excluded. This 2012 updated review identified a further 90 records but no new trials were included or excluded (Figure 1).

Figure 1. Figure 1 Study flow diagram

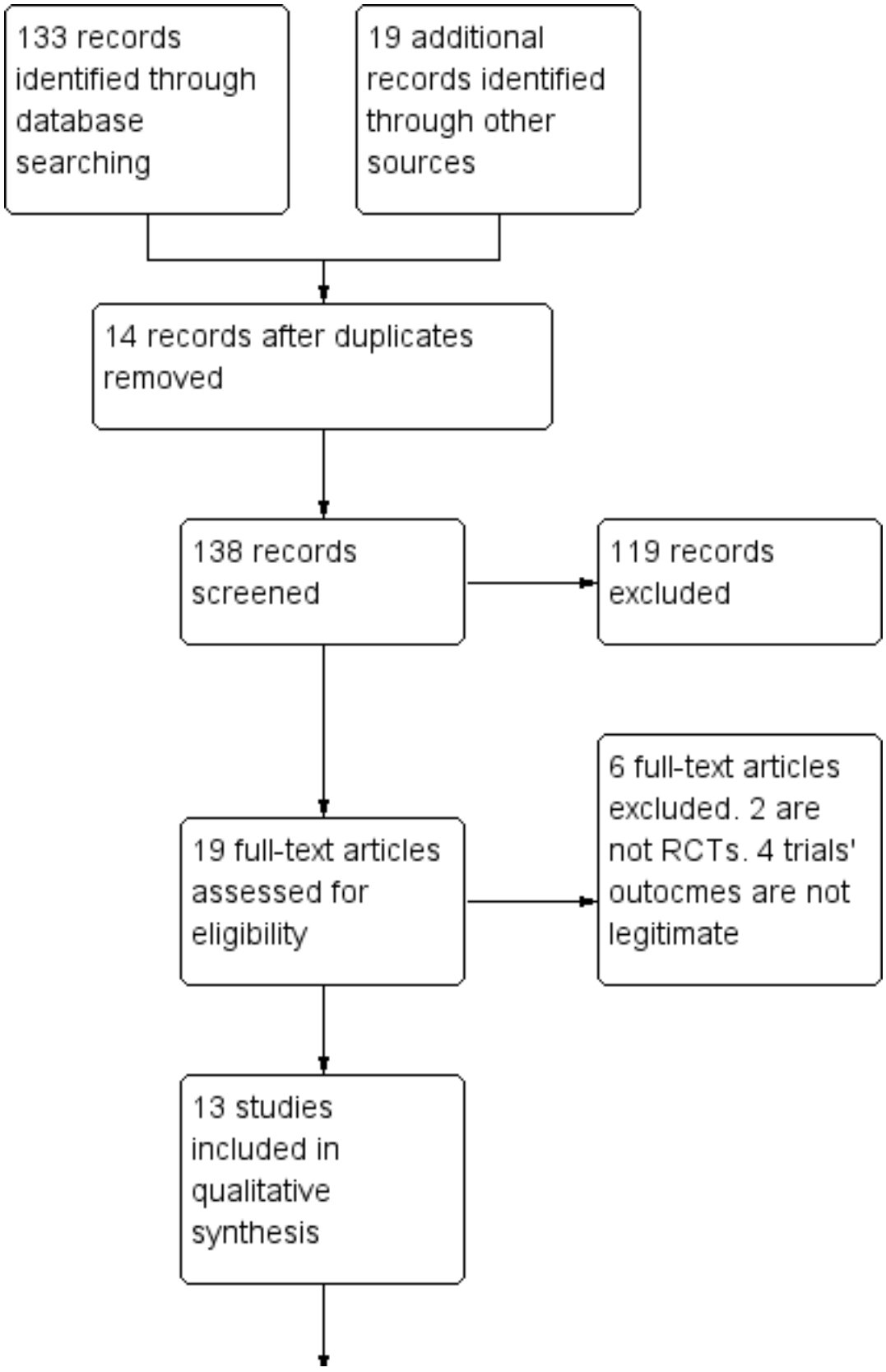
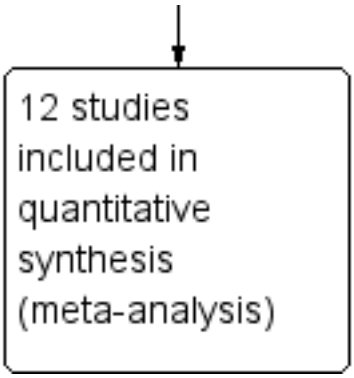


Figure 1. (Continued)



Included studies

We identified 12 RCTs (Bian 2003; Feng 2003; Hou 2004; Li 2004a; Li 2004b; Li 2004c; Ren 2004; Zhang 2003; Zhang 2004a; Zhang 2004d; Zhang 2004c; Zhao 2003) and one quasi-RCT (Wang 2003a) involving 640 SARS participants meeting the inclusion criteria. A total of 12 compound Chinese herbs were identified (Table 1).

Excluded studies

We excluded 10 RCTs. The outcome measures of four RCTs (Chen 2006; Li 2004e; Li 2004f; Li 2004g) did not meet the inclusion criteria. In one RCT (Huang 2004) the word "randomisation" appeared in the abstract, but after assessing the full text, this study was found not to be a RCT.

Four RCTs (Jiang 2003; Wang 2003b; Wang 2003c; Zhang 2003c) were the duplicates of Bian 2003, Ren 2004, Wang 2003a and Zhang 2003, respectively. The word "randomisation" appeared in the abstract (Li 2004h), but after assessing the full text, this study was found to be a clinical controlled trial.

Risk of bias in included studies

Allocation

Four trials (Bian 2003; Hou 2004; Li 2004a; Ren 2004) described the methods used to generate the random allocation sequence. The random sequence was produced by a computer program in Bian 2003, stratification randomisation in Hou 2004 and Ren 2004 and generated by a random number table in Li 2004a.

One trial (Wang 2003a) misunderstood the concept of randomisation. In this paper, it was stated that a random sequence was produced by a number table or the number of patients in hospital. In fact, this trial was a quasi-RCT. Six trials (Feng 2003; Li 2004b; Li 2004c; Zhang 2004a; Zhang 2004c; Zhao 2003) did not report the method used to generate random allocation sequences except mentioning "random".

Blinding

Single-blinding of the participants was used in 10 trials (Bian 2003; Feng 2003; Hou 2004; Ren 2004; Wang 2003a; Zhang 2003; Zhang 2004a; Zhang 2004c; Zhang 2004d; Zhao 2003). No blinding was used in two trials (Li 2004a; Li 2004b).

Incomplete outcome data

The number and reasons for loss to follow-up were not reported in 11 trials (Bian 2003; Feng 2003; Hou 2004; Li 2004a; Li 2004b; Li 2004c; Ren 2004; Wang 2003a; Zhang 2004a; Zhang 2004d; Zhao 2003). Although Zhang 2003 did not report on loss to follow-up, we concluded that no loss to follow-up occurred.

Selective reporting

Feng 2003 reported the number of participants with significant improvement, improvement and no improvement, without defining these.

Zhang 2004a used a quality of life scale to evaluate the effect of integrated Chinese and Western medicines. Reporting of quality of life improvement was unclear, which made it impossible to extract data to conduct a quantitative analysis.

Other potential sources of bias

No other potential source of bias was identified.

Effects of interventions

1. Mortality

Six studies (Hou 2004; Ren 2004; Wang 2003a; Zhang 2003; Zhang 2004c; Zhao 2003) involved 125 participants and five of these studies used compound Chinese herbs and reported mortality. Meta-analysis of two studies (Zhang 2003; Zhao 2003) of No. 1, 2, 3 Feidian combined with Western medicines versus Western medicines alone showed that there was no significant difference detected between the two groups (risk ratio (RR) 0.35, 95% confidence interval (CI) 0.09 to 1.37) (Analysis 9.1).

Four studies (Hou 2004; Ren 2004; Wang 2003a; Zhang 2004c) of Chinese herbs integrated with Western medicines also showed no statistical differences in mortality. The respective results showed RR 0.16, 95% CI 0.01 to 3.10 (Analysis 8.1); RR 0.31, 95% CI 0.01 to 7.38 (Analysis 10.1); RR 0.43, 95% CI 0.04 to 4.50 (Analysis 11.1) and RR 0.20, 95% CI 0.01 to 4.00 (Analysis 3.4).

2. Symptom improvement

(a) Symptom scores

One trial (Hou 2004) showed that compared to Western medicine alone, compound Chinese herbs (yj) plus Western medicine did not improve the symptom score (mean difference (MD) -1.19,

95% CI -2.80 to 0.42) (Analysis 8.5). Chinese herb No. 1, 2, 3 of Feidian (Zhang 2003) combined with Western medicine improved the symptom score (MD -5.43, 95% CI -7.17 to -3.69) (Analysis 9.7).

(b) Duration of symptoms

No statistical difference was detected between the No. 1, 2, 3 of Feidian (Zhao 2003) combined with Western medicines and Western medicines alone groups, with RR 1.93, 95% CI 1.00 to 3.73 (Analysis 9.8). We could not extract the data for herb (Zhang 2004d). The original data from this trial showed that herb combined with Western medicines might decrease the symptom duration of coughs and breathing difficulties compared with Western medicines alone.

(c) Days to loss of fever

No. 1, 2, 3 of Feidian (Zhang 2003) integrated with Western medicines was more effective in reducing the number of days to loss of fever than Western medicines alone, with MD -2.50 days, 95% CI -4.10 to -0.90 (Analysis 9.9). The original data for herb (zj) (Li 2004c) also appeared effective in decreasing the number of days to loss of fever. Compared to Western medicines alone, three studies (Li 2004a: 2.8 days in the trial group and 3.4 days in the control group, P > 0.05), Zhang 2004c and Zhang 2004c (MD -1.13 days, 95% CI -3.47 to 1.21)) showed no statistical differences in days to loss of fever.

3. Absorption of pulmonary infiltration

(a) Cases of absorption of pulmonary infiltration

No. 1, 2, 3 of Feidian (Zhang 2003) and National drug No. 2 (Wang 2003a) combined with Western medicines were more effective in improving cases of absorption of pulmonary infiltration with RR 1.95, 95% CI 1.16 to 3.26 (Analysis 11.2) than Western medicines alone. However, no statistical difference was detected in another study (Ren 2004) comparing integrated Chinese with Western medicines versus Western medicines alone.

(b) Chest X-ray score for absorption of pulmonary infiltration

Compared to Western medicines alone, three studies (Hou 2004; Li 2004b; Zhang 2004c) showed statistical differences in the chest X-ray score for lung infiltrate, with MD -2.77, 95% CI -4.76 to -0.78 (Analysis 8.2), MD -0.31, 95% CI -0.39 to -0.23 (Analysis 2.1) and MD -3.16, 95% CI -5.85 to -0.47 (Analysis 3.2), respectively.

(c) Duration of absorption of pulmonary infiltration

Compared to Western medicines, herb (j) (Li 2004a) (a trial group with 10.6 days and control group with 12.1 days, P > 0.05) and No. 1, 2, 3 of Feidian (Zhang 2003) combined with Western medicines showed no statistical difference in the duration in days of absorption of pulmonary infiltration, with MD -2.20 days, 95% CI -9.72 to 5.32 (Analysis 9.3). We did not extract the data for the herb (zj). The original data also showed that no difference was detected between integrated Chinese and Western medicines and Western medicines alone.

4. Corticosteroid treatment

(a) Average total dosage of corticosteroid

Compared to Western medicines alone, three studies (Hou 2004; Li 2004b; Zhang 2004d) showed statistical differences in the average total dosage of corticosteroids, with MD -82.52 mg, 95% CI -91.36 to -73.68 (Analysis 8.3) and MD -1780.0 mg , 95% CI 1874.33 to -1685.67 (Analysis 4.1), respectively. One study (Zhao 2003) showed no statistical difference between the two groups, with MD 75.0 mg, 95% CI -366.27 to 516.27 (Analysis 9.4).

(b) Total dosage of corticosteroid at the end of treatment

No statistical difference was detected between No. 1, 2, 3 of Feidian (Zhang 2003) combined with Western medicines versus Western medicines alone in dosage of corticosteroids at the end of treatment, with MD -102.39 mg, 95% CI -219.18 to 14.40 (Analysis 9.5). Two studies (Li 2004c; Ren 2004) combined with Western medicines showed statistical differences in the dosage of corticosteroids at the end of the treatment period, with MD -62.0 mg, 95% CI -74.21 to -49.79 (Analysis 10.3) and MD -557.85 mg, 95% CI -700.27 to -415.43 (Analysis 1.1), respectively.

(c) Duration of corticosteroid treatment

No statistical difference was detected between No. 1, 2, 3 of Feidian (Zhang 2004c) combined with Western medicines versus Western medicines alone with MD -0.06 mg, 95% CI -5.56 to 5.44 (Analysis 3.3) in the dosage of corticosteroid at the end of treatment. Two studies (Hou 2004; Li 2004c) combined with Western medicines showed statistical differences in the dosage of corticosteroids at the end of the treatment period, with MD -8.29 mg, 95% CI -15.39 to -1.19 (Analysis 7.3) and MD -2.67 mg, 95% CI -5.01 to -0.33 (Analysis 8.4), respectively. Compound Chinese herbs combined with Western medicine shortened the duration of corticosteroid treatment compared with Western medicine alone.

5. Quality of life

Compared to Western medicines, one study (Bian 2003) reported that there was no statistical difference between the Western medicine alone and Western medicine plus Chinese herb (yj) groups in quality of life improvement, with MD -2.20, 95% CI -4.93 to 0.53 (Analysis 5.1). Another study (Li 2004b) showed that there was a statistical difference between Western medicine alone and Western medicine plus Chinese herb (x) groups in quality of life improvement, with MD -1.26, 95% CI -1.89 to -0.63 (Analysis 2.3). We did not extract data from another study (Zhang 2004a). The original data from this trial suggested that integrated Chinese and Western medicines improved the quality of life of patients. The three trials only included severe acute respiratory syndrome (SARS) participants at the recovery stage.

6. Number of days in hospital

One study (Zhang 2004d) of integrated Chinese and Western medicines versus Western medicines alone showed no statistical difference detected in number of days in hospital, with MD -2.13 days, 95% CI -5.94 to -1.68 days (Analysis 4.2). Another study (Li 2004a) compared combined Chinese with Western medicines to Western medicines alone and showed a statistical difference in the number of days in hospital, with MD days -8.66, 95% CI -15.66 to -1.66 days (Analysis 7.4).

7. Adverse events

One trial (Ren 2004) reported that no adverse effects were found in the Chinese herbs combined with Western medicines and Western medicines alone groups. Another trial (Li 2004c) reported that no statistical difference in adverse events was detected between Chinese herbs combined with Western medicines and Western

medicines alone, with RR 0.17, 95% CI 0.01 to 3.94 (Analysis 1.2). Two patients developed hypertension combined with diabetes mellitus in the Western medicine alone group. No adverse events were found in the Chinese herbs combined with Western medicine group in this trial. No other trials reported adverse events.

DISCUSSION

This systematic review evaluated the effectiveness of single prescriptions for severe acute respiratory syndrome (SARS) patients. Different prescriptions of elements and dosages of each herb may result in different outcomes in SARS patients. Therefore, we did not pool all the data from the compound herbs. This may lead to a more valid result and more meaningful information for clinical practice. To help physicians understand the effectiveness of Chinese herbs for SARS, we describe the elements and dosages of all the prescriptions in this review in Table 1.

In this systematic review, three trials (Bian 2003; Li 2004b; Zhang 2004a) only included SARS participants in the recovery stage. The results of the three trials suggest that Chinese herbs combined with Western medicines were more effective in improving the quality of life of SARS patients compared to Western medicines alone. It is possible that Chinese herbs play a more important role in the recovery stage of SARS participants. However, there is a need to conduct more high-quality trials to confirm this hypothesis.

The outcome measures of the included trials were complex. For symptom improvements, one trial (Zhang 2003) reported symptom scores of SARS participants. However, the symptom score evaluation scales used in this trial were produced by the trial authors themselves, and were not an international or standard scale recognised in China. Two trials (Zhang 2004d; Zhao 2003) reported symptom duration, not symptom scores. Four trials (Li 2004a; Li 2004c; Zhang 2003; Zhang 2004c) reported days to loss of fever. Quality of life was reported in three trials (Bian 2003; Li 2004b; Zhang 2004a) using a scale produced by the trial authors and not using a standard international scale (Wang 2001). Two trials (Ren 2004; Wang 2003a) reported cases of absorption of pulmonary infiltration. Three trials (Hou 2004; Li 2004b; Zhang 2004c) reported chest X-ray scores for absorption of pulmonary infiltration. The results of the five trials (Hou 2004; Li 2004b; Ren 2004; Wang 2003a; Zhang 2004c) showed that Chinese herbs combined with Western medicines were more effective in improving absorption of pulmonary infiltration than Western medicines alone. Three trials (Li 2004a; Li 2004c; Zhao 2003) reported duration of absorption of pulmonary infiltration in days. The results of the three trials showed no difference between Chinese herbs combined with Western medicines and Western medicines alone. However, we do not think that duration of absorption of pulmonary infiltration is a particularly meaningful outcome measure in clinical practice.

SARS was a new, virulent disease and its treatment protocols were complex. Western medicines for SARS patients included high doses of antibiotics and corticosteroids. Many Chinese physicians thought that Chinese herbs could lessen the severity of the adverse effects of Western medicines. Adverse effects were therefore very important outcome measures that needed to be reported. It was unfortunate that within the included studies, only two trials (Li 2004c; Ren 2004) reported adverse events at the end of 10 days of treatment. However, we appreciate that it was very difficult to perform clinical trials on SARS participants using traditional Chinese herbs; therefore we value the results obtained.

It is regrettable that the quality of the included trials is poor. We do not think that the evidence in this systematic review is strong enough to confirm some conclusions.

Summary of main results

Current evidence shows that Chinese herbs plus Western medicine have no benefit in terms of mortality, compared with Western medicine alone. However, significant benefits in improvement of symptoms, including decreasing body temperature, cough and breathing difficulties, decreasing dosages of corticosteroids, improving absorption of pulmonary infiltration and improving quality of life, were observed. Weak evidence suggests that Chinese herbs are beneficial in shortening the number of days spent in hospital. No adverse effects of Chinese herbs were observed.

Overall completeness and applicability of evidence

The total of 640 Chinese SARS participants can be broken down to 167 normal SARS cases, 316 severe SARS cases, 91 SARS participants at recovery stage, 61 SARS participants with lung infiltrates and 55 SARS participants without disease type. The ages of the SARS patients ranged from 14 to 79 years old. Only six trials reported mortality. Three trials reported quality of life improvement. Two trials reported number of days spent in hospital. Six trials reported symptom improvement. Eight trials reported dosage of corticosteroid treatment. The reporting indexes of symptom improvement and corticosteroid usage varied, which reduced the completeness of our results.

Quality of the evidence

A total of 12 randomised controlled trials (RCTs) and one quasi-RCT were identified. No trials pre-specified the sample size. The average size of the included trials was 46.15, ranging from 28 to 77. None of the trials described allocation concealment, reported the number and reasons for loss to follow-up or used blinding, and none used an intention-to-treat (ITT) analysis. The longest duration of treatment for the participants was 21 days. No trials reported the long-term effectiveness of integrated Chinese and Western medicines for SARS patients. We therefore graded all the trials as at high risk of selection bias, performance bias, attrition bias and detection bias.

Potential biases in the review process

We attempted to retrieve all RCTs of Chinese herbs for treating SARS. However, we only found 12 trials in Chinese.

Agreements and disagreements with other studies or reviews

A systematic review (Liu 2004) has reported that integrated Chinese and Western medicines decrease mortality. These authors pooled data for different Chinese herbs. The basic principles of diagnosis and treatment in traditional Chinese medicine are based on syndrome differentiation. The traditional Chinese medicine doctor will prescribe different Chinese herbs depending on the syndrome, a syndrome being composed of various symptoms. Pooling the data from different Chinese herbs means pooling clinically heterogenous interventions. Therefore, the result of pooling different Chinese herbs in this systematic review (Liu 2004) is meaningless in clinical practice. Another review (Leung 2007) showed that adjuvant herbal therapy improves symptoms

such as fever, chest infection and leads to a decrease in steroid consumption.

AUTHORS' CONCLUSIONS

Implications for practice

We did not find that Chinese herbs combined with Western medicines decreased the mortality rate of severe acute respiratory syndrome (SARS) patients compared to Western medicine alone. No. 1, 2, 3 of Feidian (Zhang 2003) combined with Western medicines may improve the symptoms of SARS patients. No. 1, 2, 3 of Feidian (Zhang 2003) and another four herbal preparations (Hou 2004; Li 2004b; Ren 2004; Zhang 2004c) combined with Western medicine may be more effective in improving absorption of pulmonary infiltration than Western medicines alone. Two herbs (Hou 2004; Zhang 2004d) combined with Western medicines may decrease the average daily dose of corticosteroids versus Western medicines alone. One herb (Li 2004c) combined with Western medicines may decrease the dosage of corticosteroids at the end of treatment versus Western medicines alone. Two herbs (Hou 2004; Li 2004a) combined with Western medicines may decrease the days of corticosteroid treatment versus Western medicines alone. Three herbs (Bian 2003; Li 2004b; Zhang 2004a) combined with Western medicines may improve the quality of life of SARS patients versus Western medicines alone. One herb (Li 2004a) combined with Western medicine may shorten the length of stay in hospital for SARS patients. However, due to the low quality of trials, we recommend caution when applying the evidence.

Implications for research

High-quality trials should be conducted to examine the long-term effectiveness of Chinese herbs combined with Western medicines for SARS patients. Adverse events should be a necessary outcome measure in all future trial reports.

ACKNOWLEDGEMENTS

The authors wish to thank Liz Dooley, Managing Editor of the Acute Respiratory Infections (ARI) Group for her assistance in editing this review and Sarah Thorning, ARI Group Trials Search Co-ordinator for her assistance with defining terms for the search strategy. We also wish to thank the following people for commenting on the 2006 draft review: Durhane Wong-Rieger, Wuli Hui, Hai Li, Nelcy Rodriguez and Antonio Cunha. We thanks Yukun Kang for her work on previous publications of this review. Finally, we wish to acknowledge the following people for commenting on the 2008 updated draft: Hayley Edmonds, Wuli Hui, Sree Nair and Jenny Doust.

REFERENCES

References to studies included in this review

Bian 2003 *{published data only}*

Bian YJ, Qi WS, Song QQ, Li GC, Fu YL, Tang XD, et al. Evaluation on the effect of integrative medical treatment on quality of life of rehabilitation stage in 85 patients with SARS. *Chinese Journal of Integrated Traditional and Western Medicine* 2003;**23**(9):658-60.

Feng 2003 *{published data only}*

Feng TZ, Tang GL, Du P. Clinical study of high-dose glycyrrhiza for SARS patients. Paper Collection of National Lung Infection, Respiratory Failure and SARS. Tianjing: China Medical Association, 2003:593.

Hou 2004 *{published data only}*

Hou YJ, He XM, Zhang YL, Wu HL, Cheng ZH, Zhou YZ. Integrated traditional Chinese and Western medicine for 34 patients with severe SARS. *Chinese Journal of Integrated Traditional and Western Medicine* 2004;**24**(1):81-2.

Li 2004a *{published data only}*

Li J, Li SD, Du L, Dong Y, Xiao XH, Yang YP, et al. Clinical study on treatment of severe acute respiratory syndrome with integrative Chinese and Western medicine approach. *Chinese Journal of Integrated Traditional and Western Medicine* 2004;**24**(1):28-31.

Li 2004b *{published data only}*

Li X, Sun J, Zhang ZY, Lu JW, Luo G, Wang T, et al. Clinical study of integrated traditional Chinese and Western medicine for patients with severe acute respiratory syndrome on recovery stage. *Beijing Journal of TCM* 2004;**23**(1):26-7.

Li 2004c *{published data only}*

Li ZJ, Bao FH, Li Q, Wang BS, Li YP, Wang JD. Clinical study on treatment of severe acute syndrome with integrated traditional Chinese and Western medicine. *Chinese Journal of Integrated Traditional and Western Medicine in Intensive and Critical Care* 2004;**10**(4):214-6.

Ren 2004 *{published data only}*

Ren AM, Zhang SW, Wang BN, Liu LG, Liang XM. Clinical study on treatment of severe acute respiratory syndrome by integrative Chinese and Western medicine. *Chinese Journal of Integrated Traditional and Western Medicine* 2004;**24**(3):112-4.

Wang 2003a *{published data only}*

Wang RB, Liu JM, Jiang YY, Wu YZ, Wang XJ, Chi PP, et al. Effect of integrated Chinese and Western medicine for SARS patients. *Chinese Journal of Integrated Traditional and Western Medicine* 2003;**23**(7):293-3.

Zhang 2003 *{published data only}*

* Zhang XM, Zhang YL, Yang ZF, Jin YW, Tan XH, Zhang Y, et al. Clinical effect of No. 1, 2, 3 of Feidian formula for severe acute respiratory. *China Journal of Traditional Chinese Medicine and Pharmacy* 2003;**18**(6):323-5.

Zhang 2004a *{published data only}*

Zhang QH, Huang J, Liu SZ, Wang LP, Zhang LS, Wu M. Clinical study of integrated Chinese and Western medicine for quality of life improvements of SARS patients at recovery stage. *Beijing Journal of TCM* 2004;**23**(1):22-4.

Zhang 2004c *{published data only}*

Zhang LS, Wu WP, Hou YJ, Wang CY, Feng CL, Ren CY, et al. Integrated Chinese and Western medicine for 30 patients with SARS. *Journal of Traditional Chinese Medicine* 2004;**45**(9):675-7.

Zhang 2004d *{published data only}*

Zhang SN. Clinical effect of integrated traditional Chinese and Western medicine for lung filtrate absorption of patients with severe acute respiratory syndrome. *Chinese General Practice* 2003;**6**(7):576.

Zhao 2003 *{published data only}*

Zhao CH, Li YH, Zhang K, Jing RH, Gou CY, Hu ZJ, et al. Randomized control study of integrated traditional Chinese and Western medicine in treatment of 77 patients with severe acute respiratory syndrome. *Chinese Journal of Integrated Traditional and Western Medicine in Intensive and Critical Care* 2003;**10**(4):197-200.

References to studies excluded from this review

Chen 2006 *{published data only}*

Chen X, Lin JT, Yu HX, Li Y, Zhao XM, Su N, et al. Research of pulmonary function, health-related quality of life of cured patients with severe a cured respiratory syndrome and the effect of Chinese traditional medicine treatment during recovery. *Chinese Journal of Rehabilitation Medicine* 2006;**21**(2):124-6.

Huang 2004 *{published data only}*

Huang XB, Li ZX, Li C, Sun SL, Cheng WQ, Wang MY, et al. Clinical study of integrated Chinese and Western medicine for old patients with severe acute respiratory syndrome. *Chinese Journal of Gerontology* 2004;**24**(3):223-5.

Jiang 2003 *{published data only}*

Jiang ZX, Tang XD, Ji WS, Bian YJ, Song QQ, Li GX, et al. Evaluation on the effect of integrated Chinese and Western medicine of the recovery stage in SARS patients. *Journal of Traditional Chinese Medicine* 2003;**44**(9):666-8.

Li 2004d *{published data only}*

Li H, Lu CZ, Tang KC, Liu GW. Clinical observation on treatment of SARS with combination of Chaihu droplet pill and Huoxiang zhengqi droplet pill. *Chinese Journal of Integrated Traditional and Western Medicine* 2004;**24**(4):321-4.

Li 2004e *{published data only}*

Li J, Li SD. Effects of traditional Chinese medicine on hepatic and renal function of SARS patients in convalescent period. *World Journal of Infection* 2004;**4**(3):252-4.

Li 2004f *{published data only}*

Li J, Li SD, Du L, Dong Y, Xiao XH, Yang YP, et al. Observation on changes of hepatic and renal function in patients with SARS after treatment with integrative traditional Chinese and Western medicine. *Infection Disease Information* 2004;**17**(1):20-3.

Li 2004g *{published data only}*

Li J, Li SD, Liu JC, Du L, Dong Y, Wang FS, et al. Effects on lymphocyte and T subcytes of SARS patients treated by integrative traditional Chinese and Western medicine. *Chinese Journal of Immunology Chinese Journal of Immunology* 2004;**20**(5):318-22.

Li 2004h *{published data only}*

Li ZX, Huang XB, LI B, Sun SL, Cheng WQ, Wang MY, et al. Integrated Chinese and Western medicine for 122 patients with SARS. *Journal of Traditional Chinese Medicine* 2004;**45**(7):510-1.

Wang 2003b *{published data only}*

Wang BE, Zhang SW, Ren AM. Integrated Chinese and Western medicine for severe acute respiratory syndrome. Collection of Traditional Chinese Medicine for SARS. Beijing, 2003:50-2.

Wang 2003c *{published data only}*

Wang RB, Liu JM, Jiang YY, Wu YZ, Wang XJ, Xu DZ. Traditional Chinese medicine for SARS patients. *Journal of Beijing TCM* 2003;**22**(3):8-9.

Zhang 2003c *{published data only}*

Zhang YL, Zhang XM, Ying YW, Yang ZF, Tan XH, Wang MY, et al. Clinical observation of 65 SARS cases treated with a combination of TCM and Western-style therapies. *Journal of Beijing University of TCM* 2003;**26**(6):60-4.

Additional references

Drosten 2003

Drosten C, Gunther S, Preiser W, van der Werf S, Brodt HR, Becker S, et al. Identification of a novel coronavirus in patients with severe acute respiratory syndrome. *New England Journal of Medicine* 2003;**348**:1967-76.

Egger 1997

Egger M, Davey SG, Schneider M, Minder C. Bias in meta-analysis detected by a simple graphical test. *BMJ* 1997;**315**(7109):629-34.

Higgins 2011

Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration. Available from www.cochrane-handbook.org. Chichester, UK: Wiley-Blackwell, 2011.

Ksiazek 2003

Ksiazek TG, Erdman D, Goldsmith CS, Zaki SR, Peret T, Emery S, et al. A novel coronavirus associated with severe acute respiratory syndrome. *New England Journal of Medicine* 2003;**348**(20):1953-66.

Leung 2007

Leung PC. An efficacy review of SARS on Chinese medicine. *American Journal of Chinese Medicine* 2007;**35**(4):575-81.

Liu 2002

Liu P, Cao YM, Qiao XM. Shenmai injection in promoting postoperative recovery in patients of breast cancer. *Chinese Journal of Integrated Traditional and Western Medicine* 2002;**20**(5):328-9.

Liu 2003

Liu JP, Yang M, Liu YX, Wei ML, Grimsgaard S. Herbal medicines for treatment of irritable bowel syndrome. *Cochrane Database of Systematic Reviews* 2006, Issue 1. [DOI: 10.1002/14651858.CD004116.pub2]

Liu 2004

Liu J, Manheimer E, Shi Y, Gluud C. Chinese herbal medicine for severe acute respiratory syndrome: a systematic review and meta-analysis. *Journal of Alternative and Complementary Medicine* 2004;**10**(6):1041-51.

MoH 2003

Ministry of Health of China. The clinical diagnosis standard of severe acute respiratory syndrome (SARS). *Herald of Medicine* 2003;**22**(6):363.

Peiris 2003

Peiris JS, Yuen KY, Osterhaus AD, Stohr K. The severe acute respiratory syndrome. *New England Journal of Medicine* 2003;**349**(25):2431-41.

Poutanen 2003

Poutanen SM, Low DE, Henry B, Finkelstein S, Rose D, Green K, et al. Identification of severe acute respiratory syndrome in Canada. *New England Journal of Medicine* 2003;**348**(20):1995-2005.

RevMan 2011 [Computer program]

The Nordic Cochrane Centre, The Cochrae Collaboration. Review Manager (RevMan). Version 5.1. Copenhagen: The Nordic Cochrane Centre, The Cochrae Collaboration, 2011.

Stockman 2006

Stockman LJ, Bellamy R, Garner P. SARS: systematic review of treatment effects. *PLoS Medicine* 2006;**3**(9):e343.

Wang 2001

Wang JL, Kang DY. Evaluation and measurement of health-related quality of life. In: Wang JL editor(s). Epidemiology: Clinical Research Design, Measurement and Evaluation. 2. Shanghai: Shang Science and Technology Press, 2001:358-75. [ISBN7-5323-5932-8]

WHO 2003

World Health Organization. Case definitions for surveillance of severe acute respiratory syndrome (SARS). http://www.who.int/csr/sars/casedefinition/en (accessed 5 May 2004).

Yu 2003

Yu J. The opening lecture of symposium on treating SARS by traditional Chinese medicine. Symposium on Treating SARS by Traditional Chinese Medicine. Beijing: State Administration of Traditional Chinese Medicine People's Republic of China, 2003; Vol. July.

References to other published versions of this review

Liu 20010

Liu X, Zhang M, He L, Li Y. Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS). *Cochrane Database of Systematic Reviews* 2010, Issue 6. [DOI: 10.1002/14651858.CD004882.pub2]

Liu 2006

Liu X, Zhang M, He L, Li YP, Kang YK. Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS). *Cochrane Database of Systematic Reviews* 2006, Issue 2. [DOI: 10.1002/14651858.CD004882.pub2]

Liu 2008

Liu X, Zhang M, He L, Li YP, Kang YK. Chinese herbs combined with Western medicine for severe acute respiratory syndrome (SARS). *Cochrane Database of Systematic Reviews* 2008, Issue 4. [DOI: 10.1002/14651858.CD004882.pub2]

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

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

Bian 2003

Methods	Randomised controlled trial Size: not specified Randomisation: randomisation table was produced by a computer program Loss to follow-up: the number and reasons were not reported Blinding: single Statistical method: data were analysed by t test and X test by SPSS 11.0 software. ITT was not used
Participants	Ethnicity: Chinese Total number of 40 participants Inclusion criteria: 1. SARS participants at recovery stage diagnosed by SARS diagnosis criteria issued by Ministry of Health of China 2. Age range from 18 to 70 years old Exclusion criteria: 1. Severe cerebrovascular disease, liver disease, renal disease, blood disease, metabolic and endocrine disorder, mental health disease or other severe disease influencing quality of life factors such as cancer, AIDS, etc. 2. Pregnant or lactating women 3. People of allergic constitution Integrated Chinese and Western medicine (trial group): 20 participants - 9 female and 11 male. Average age was not given 14 participants with normal SARS, 6 patients with severe SARS Western medicine alone (control group): 20 participants - 5 female and 15 male. The age range was from 41 to 14 years 14 participants with normal SARS and 6 participants with severe SARS No differences were detected between 2 groups at baseline
Interventions	Control group: 1. Rest in bed 2. The treatment protocol was determined according to the symptoms of participants Trial group: 1. Western interventions were the same as for control group 2. No. I of Chinese herbs The duration of treatment for the 2 groups was 21 days

Bian 2003 *(Continued)*

Outcomes	All outcome measures were assessed at the end of treatment Quality of life
Notes	Supported by Traditional Chinese Medicine in Beijing (No. jingzhongke SARS -13)

Feng 2003

Methods	Randomised controlled trial Size: not specified Randomisation: the method was not reported Loss to follow-up: the number and reasons were not reported Blinding: single Statistical method: the type of statistical method used was not reported
Participants	Ethnicity: Chinese Inclusion criteria: 1. Diagnosed SARS patients Total number of 27 participants with 13 females and 14 males. Age ranged from 17 to 74 years old 14 normal SARS patients and 13 severe SARS patients No significant differences were detected between the 2 groups Western medicine alone (control group): 11 participants Integrated Chinese and Western medicine (trial group): 11 participants
Interventions	Control group: nutritional support, antiviral and other treatments according the symptoms Trial group: nutritional support, antiviral and other treatments according the symptoms plus glycyrrhetinic The dosages of all the drugs were not reported The duration of treatment for the 2 groups was 14 days
Outcomes	All outcome measures were assessed at the end of the treatment 1. Cure, good improvement, improvement and no improvement 2. Adverse events
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	Not used

Hou 2004

Methods	Randomised controlled trial Size: not specified Randomisation: stratification randomisation Blinding: single-blinding Loss to follow-up: the number and reason were not reported Statistical analysis: x test and t test were used. ITT was not used Quality of grade: C
Participants	Ethnicity: Chinese

Hou 2004 *(Continued)*

	Total of 34 severe SARS participants Integrated Chinese and Western medicine (trial group): 19 participants with 10 female and 9 male. Ages ranged from 21 to 73 years old 1 participant with hypertension, 1 participant with coronary heart disease, 2 with rheumatism Western medicine only (control group): 15 participants with 9 female and 6 male. Average age ranged from 21 to 79 years old No statistical differences were detected between 2 groups at baseline
Interventions	Control group: 1. Ribavirin 1.0 to 2.0 g/d + azithromycin 0.5 g/d or levofloxacin 0.4 g/d 2. Corticosteroid 80 to 480 mg/d 3. Supporting treatment Trial group: 1. Western interventions were the same as that of control group 2. Compound Chinese herbs (h), 400 to 500 ml/d The duration of treatment of the 2 groups was 36 days
Outcomes	All outcome measures were assessed at the end of treatment 1. Mortality 2. Cure 3. Symptom score 4. Lung infiltrate score 5. The dose and time of corticosteroid
Notes	

Li 2004a

Methods	Randomised controlled trial Size: not specified Randomisation procedure: random sequence was produced by a random number table Blinding: not reported Loss to follow-up: the number and reasons were not reported Statistical analysis: t test was used. ITT was not used
Participants	Ethnicity: Chinese Inclusion criteria: 1. SARS patients diagnosed by the SARS diagnosis criteria of Ministry of Health of China issued on 3 May 2003 2. Age 16 to 65 years 3. SARS patients were categorised as normal, severe and critically severe types Exclusion criteria: participant condition complicated by other factors such as severe cerebrovascular disease, liver disease, renal disease, haematological disease, metabolic and endocrine disorders, mental health disease or other severe diseases influencing quality of life, such as cancer, AIDS, etc. Total number: 48 participants. Integrated Chinese and Western medicine (trial group) and Western medicine alone (control group), respectively Integrated Chinese and Western medicine groups: 24 participants with 14 female and 10 male. Average ages ranged from 19 to 54 years old Normal SARS 23 participants, severe SARS 1 participant Western medicine only group: 24 participants with 18 female participants and 6 male participants. Average ages ranged from 18 to 64 years Normal type 22 participants and severe type 2 participants

Li 2004a *(Continued)*

	No statistical differences were detected between the 2 groups at baseline with P < 0.05, except cough symptoms
Interventions	Western medicine alone (control group): antiviral drugs + immunostimulants + corticosteroids. The dose of corticosteroids was 80 to 320 mg/d. The duration and dose of other drugs were not reported Integrated Chinese and Western medicine (trial group): 1. Western medicine interventions were the same as the control group 2. Recipes of No. 1 Kangfeidian pill and No. 2 Kangfeidian pill were always used for participants plus Yingqing Heji, Fufang Yuxingcao Heji and Ganqi Heji being added and decreased according the different symptoms
Outcomes	Outcome measures were assessed at the end of treatment Trial group: absorption of pulmonary infiltration: 18.88 ± 9.20 d Loss of fever: 5.83 ± 4.20 d Duration of corticosteroid treatment: 27.50 ± 10.28 d Duration of stay in hospital: 36.92 ± 9.17 d Control group: absorption of pulmonary infiltration: 23.88 ± 14.79 d Loss of fever: 5.92 ± 5.79 d Duration of corticosteroid treatment: 35.79 ± 14.48 d Duration of hospital stay: 45.58 ± 14.09 d
Notes	Supported by Chinese national 863 key project No. 2003AA208101

Li 2004b

Methods	Randomised controlled trial Size: not specified Randomisation: the method of randomisation was not reported Blinding: not reported Loss to follow-up: the number and reasons were not reported Statistical analysis: t test was used. SPSS software was used. ITT was not used
Participants	Ethnicity: Chinese Total of 65 SARS patients Integrated Chinese and Western medicine (trial group): 35 participants with 12 females and 23 males. The average age of the participants was not given. 5 participants with normal SARS and 30 participants with severe SARS Western medicine alone (control group): 30 participants with 7 females and 23 males. The average age of the participants was not given. 7 participants with normal SARS and 23 patients with severe SARS No significant differences were detected between the 2 groups
Interventions	Control group: 1. Corticosteroid and antibiotics The dose was not reported Trial group: Compound Chinese herbs The duration of treatment for the 2 groups was 3 weeks
Outcomes	All outcome measures were assessed at the end of treatment 1. Symptom scores 2. The dose of corticosteroid 3. Lung infiltrate score 4. Quality of life score
Notes	

Li 2004c

Methods	Randomised controlled trial Size: not specified Randomisation procedure: not reported Blinding: not reported Loss to follow-up: the number and reason were not reported Statistical analysis: t test was used. ITT was not used
Participants	Ethnicity: Chinese Total of 77 patients including normal SARS 51 patients and severe or critical severe SARS 26 patients. There were 31 females and 46 males The average age of the participants ranged from 14 to 78 years Inclusion criteria: SARS participants were diagnosed by criteria issued by CDC in the USA and the Ministry of Health in China Exclusion criteria: Patients with cancer, AIDS, haematological disease, metabolic and endocrine disorders, severe heart disease, encephalopathy, nephropathy, liver disease and suspected SARS patients who were not diagnosed as true SARS patients Integrated Chinese and Western medicine (trial group): 37 participants Western medicine alone (control group): 40 participants
Interventions	Control group: 1. IgA - globulin 10 to 20 g/d 2. Thymosin: 50 to 100 mg/d 3. Corticosteroid: 40 to 100 mg/d 4. Ribavirin: 0.5 g/d 5. Azithromycin, levofloxacin. The dose was not reported 6. Other treatments according to the symptoms Trial group: 1. Intravenous Chuanghuning, 0.4 g/d 2. Intravenous Shenmai injection, 20 to 30 ml/d 3. Oral Hufeiqingsha drink, 150 ml/d 4. Oral Jieguzhitong capsule, 3 capsules per day 5. Oral Zhuyingsanjie capsule, 3 per day 6. Qingsha spray
Outcomes	Outcome measures were assessed at the end of treatment 1. absorption of pulmonary infiltration 2. Stay in hospital 3. Dosage of corticosteroid 4. Adverse events
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	High risk	Not used

Ren 2004

Methods	Randomised controlled trial Size: not specified Randomisation: stratification randomisation Blinding: single-blinding Loss to follow-up: the number and reasons were not reported Statistical analysis: x test and t test were used. ITT was not used
Participants	Ethnicity: Chinese Total number 60 participants Integrated Western and Chinese medicine (trial group): 31 participants with 14 female and 17 male participants. 19 participants with an age of less than 40 years; 12 participants with an age of 40 to 59 years old; 13 participants with normal SARS, 18 participants with severe SARS Western medicine alone (control group): 29 participants with 15 female and 14 male. 17 participants aged less than 17 years of age, 11 participants aged from 40 to 59 years; 1 participant older than 60 years; 16 participants with normal SARS, 13 participants with severe SARS
Interventions	Control group: 1. Corticosteroid: 80 to 800 mg/d 2. Intravenous ribavirin 800 to 1000 mg/d; and intravenous IgA globulin 5 to 8 g/d 3. Intravenous thymosin IgA globulin 100 to 160 mg/d and IgA globulin 5 to 8 g/d 4. Intravenous azithromycin 0.5 g/d, levofloxacin 0.4 g/d, oral moxifloxacin 0.4 g/d and intravenous ceftriaxone 2 to 4 g/d 5. Bilevel positive airway pressure (BIPAP) 6. Nutritional support 7. Organ protection 8. Treatment of complications 9. Psychological treatment Trial group: 1. Western interventions were the same as trial group 2. Compound Chinese herbs The duration of treatment for the 2 groups was 10 days
Outcomes	All outcome measures were assessed at the end of treatment 1. Mortality 2. Symptoms 3. Lung infiltrate by chest X-ray 4. The time of BIPAP 5. The dose of corticosteroid 6. Adverse events
Notes	

Wang 2003a

Methods	Quasi-randomised controlled trial Size: not specified Randomisation: randomisation sequence was produced by hospital number Blinding: single-blinding Loss to follow-up: the number and reasons were not reported Statistical analysis: statistical method was not reported. ITT was not used
Participants	Ethnicity: Chinese Total of 65 SARS participants

Wang 2003a *(Continued)*

	Integrated Chinese and Western medicine (trial group): 35 participants with 12 females and 23 males. The average age of the participants was not given. 5 participants with normal SARS and 30 participants with severe SARS Western medicine alone (control group): 30 participants with 7 females and 23 males. The average age of the participants was not given. 7 participants with normal SARS and 23 participants with severe SARS No significant differences were detected between the 2 groups
Interventions	Control group: 1. Corticosteroid: 80 to 160 mg/d 2. Thymosin 3. Azithromycin 4. Levofloxacin 5. Antiviral drugs Trial group: 1. The basic treatment intervention was same as that of control group 2. National herbs No. 2, No. 3 and No. 4 200 ml/d The duration of treatment for the 2 groups was more than 14 days
Outcomes	All outcome measures were assessed at the end of treatment 1. Mortality 2. Lung infiltrate by chest X-ray
Notes	Supported by 863 of Science and Technology Department and State Administration of Traditional Chinese Medicine of People's Republic of China (No. 2003A208101)

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	High risk	

Zhang 2003

Methods	Randomised controlled trial Size: not specified Randomisation: stratification according the degree of the disease, then using simple randomisation Blinding: single Loss to follow-up: not reported. It can be concluded that there was no follow-up Statistical method: t test was used. ITT was not used
Participants	Ethnicity: Chinese Total of 63 patients Inclusion criteria: 1. SARS patients were diagnosed using SARS guidelines issued by CDC of China on 27 April 2003 2. Ages ranged from 18 to 65 years 3. SARS contracted over the past 5 days 4. Disease type: normal and severe types Exclusion criteria: 1. Critical severe type patients - for example, participants with adult respiratory distress syndrome (ARDS) or multiple organ dysfunction syndrome (MODS) 2. Participants with complications such as severe cerebrovascular disease, liver disease, kidney disease, haematological disease, metabolic and endocrine disorders, neuropathy and mental health disease 3. Pregnant women, lactating women

Zhang 2003 *(Continued)*

	4. Participants who were sensitive to food 5. Participants who refused treatment 6. Participants who used other Chinese or Western medicines Integrated Chinese and Western medicine (trial group): 31 patients, 24 participants with severe SARS, and 7 participants with mild SARS Western medicine alone (control group): 32 participants, 23 participants with severe SARS, 9 participants with mild SARS No significant differences were detected between the 2 groups in terms of gender, age and degree of disease
Interventions	Control group: 1. Corticosteroid: 80 mg/d, 160 mg/d, 320 mg/d, 640 mg/d according to the degree of disease 2. Antiviral drugs: ganciclovir 250 mg iv bid 3. Antibiotics: azithromycin 0.5 iv qid + levofloxacin 0.2 qid; azithromycin 0.5 iv qid + Rocephin 2.0 iv qid; Sulperazon 2.0 iv bid + azithromycin 0.5 iv qid 4. Other drugs for improving the symptoms of cough etc. if necessary Trial group: No. 1, 2, 3 of Feidian 400 ml/time, bid The duration of treatment of the 2 groups was 21 days
Outcomes	Outcome measures were assessed at the end of treatment Time to loss of fever, absorption of pulmonary infiltration by chest X-ray, dose of corticosteroid
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	High risk	Not used

Zhang 2004a

Methods	Randomised controlled trial Size: not specified Randomisation: the method of randomisation was not reported Loss to follow-up: the number and reasons were not reported Blinding: single Statistical method: not reported. ITT was not
Participants	Ethnicity: Chinese Inclusion criteria: 1. SARS participants diagnosed using SARS diagnosis criteria issued by the Ministry of Health of China 2. SARS participants in recovery stage Exclusion criteria: 1. Severe cerebrovascular disease, liver disease, renal disease, blood disease, metabolic and endocrine disorders, mental health disease or other severe disease influencing quality of life such as cancer, AIDS, etc. 2. Pregnant or lactating women 3. Irritable body (for example, the patients had an allergy) Total of 51 participants with 25 females and 26 males with an average of 33 years Integrated Chinese and Western medicine (trial group): 31 participants

Zhang 2004a *(Continued)*

	Western medicine alone (control group): 20 participants No significant differences were detected between 2 groups in terms of gender, age etc.
Interventions	Control group: Western medicine alone Trial group: Western medicine plus compound Chinese herbs No. 1, No. 2 and No. 3 The duration of treatment of the 2 groups was 21 days
Outcomes	Quality of life was assessed at the end of treatment
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	High risk	Not used

Zhang 2004c

Methods	Randomised controlled trial Size: not specified Randomisation: the method was not reported Blinding: single-blind Statistical method: data were analysed by t test and X test. ITT was not used
Participants	Ethnicity: Chinese Inclusion criteria: 1. SARS participants diagnosed using SARS clinical diagnosis criteria issued by Ministry of Health in China 2. SARS participants diagnosed by traditional Chinese syndrome difference diagnosis 3. Age range from 18 to 70 years Exclusion criteria: 1. Lactating women 2. Participants of allergic constitution 3. Participants complicated with bacterial infections 4. Participants with mental health disease A total of 60 participants Integrated Chinese and Western medicine (trial group): 30 patients with 17 males and 13 females. The average age of the participants was not given Western medicine alone (control group): 30 participants with 18 males and 12 females. The average age of the participants was not given. No significant differences were tested between the 2 groups in the areas of age, sex and degree of disease
Interventions	Control group: 1. Intravenous lifuxing (0.2 g/day) and azithromycin (0.5 g/day) for 3 days 2. Ribavirin (0.5 g/day) for 6 days 3. Thymosin 200 mg/day 4. Corticosteroid: 80 to 320 mg/day for critical participants Trial group: 1. Western interventions were the same as the control group 2. Compound Chinese herbs (ls) The duration of treatment of the 2 groups was 28 days
Outcomes	All outcome measures were assessed at the end of treatment

Zhang 2004c *(Continued)*

	1. Mortality 2. Duration of corticosteroid treatment 3. Dosage of corticosteroid 4. Lung infiltrate score
Notes	

Zhang 2004d

Methods	Randomised controlled trial Size: not specified Randomisation: the details were not reported Blinding: single Loss to follow-up: not reported. It can be concluded that there was no follow-up Statistical method: t test was used. ITT was not used
Participants	Ethnicity: Chinese Inclusion criteria: diagnosed SARS patients with lung infiltrate Total of 61 patients Integrated Chinese and Western medicine (trial group): 32 patients with 1 death Western medicine alone (control group): 29 patients with 4 deaths
Interventions	Control group: normal treatments including antivirus, antibiotic, corticosteroid, etc. Trial group: 1. Normal treatments were the same as the control group 2. Glycyrrhetinic
Outcomes	1. Symptom improvements: cough, breathing difficulties 2. Days of hospital stay 3. Lung infiltrate 4. Dosage and duration of corticosteroids
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	High risk	Not used

Zhao 2003

Methods	Randomised controlled trial Size: not specified Randomisation: randomisation sequence and randomisation type were not reported Blinding: single-blind Statistical method: data were analysed by t test and X test. ITT was not use
Participants	Ethnicity: Chinese Total of 77 participants including normal type 51 participants and severe or critical severe type 26 participants. There was 31 females and 46 males with an age range of 14 to 78 years Inclusion criterion:

Zhao 2003 *(Continued)*

	SARS participants diagnosed by diagnosis criteria issued by CDC of America and Ministry of Health of China Exclusion criteria: Participants with cancer, immune system diseases, haematological disease, metabolic and endocrine disorders, severe heart disease, encephalopathy, nephropathy, liver disease and suspected SARS patients Integrated Chinese and Western medicine (trial group): 37 participants Western medicine alone (control group): 40 participants
Interventions	Control group: 1. Thymosin 80 mg/d 2. Levofloxacin 0.4 g/d 3. Corticosteroid: normal SARS participants given 40 to 80 mg/d, severe SARS participants given 80 to 180 mg/d Trial group: 1. Thymosin 80 mg/d 2. Levofloxacin 0.4 g/d 3. Corticosteroid: normal SARS participants given 40 to 80 mg/d, severe SARS participants given 80 to 180 mg/d 4. No. 1, 2, 3 Feidian decoction 200 ml/d The duration of treatment of the 2 groups was 14 to 21 days
Outcomes	Outcome measures were assessed at the end of treatment 1. Mortality 2. Duration of absorption of pulmonary infiltration 3. Dosage of corticosteroids 4. Duration of corticosteroid treatment
Notes	Supported by the Chinese Academy of Traditional Chinese Medicine of Beijing City

bid: twice a day
BIPAP: bilevel positive airway pressure
CDC: Center for Disease Control and Prevention
g/d: grams per day
ITT: intention-to-treat
iv: intravenous
mg/d: grams per day
ml/d: millilitres per day
qid: four times a day
SARS: severe acute respiratory syndrome

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

Study	Reason for exclusion
Chen 2006	The outcome measures did not met the inclusion criteria
Huang 2004	The word of "randomisation" appeared in the abstract, but after assessing the full text, this study was found not to be a randomised controlled trial. Also, the content of this paper was part of the Li 2004 study
Jiang 2003	The content is same as the Bian 2003 study
Li 2004d	Only randomly selected patients, not randomly allocated patients
Li 2004e	The outcome measures only included lab indexes and did not meet the inclusion criteria

Study	Reason for exclusion
Li 2004f	The outcome measures only included lab indexes and did not meet the inclusion criteria
Li 2004g	The outcome measures only included lab indexes and did not met the inclusion criteria
Li 2004h	The word "randomisation" appeared in the abstract, but after assessing the full text, this study was a clinical controlled trial
Wang 2003b	The content is same as the Ren 2004 reference
Wang 2003c	The content of this paper was part of the Wang 2003a reference
Zhang 2003c	The content of this paper was the same as the Zhang 2003 reference

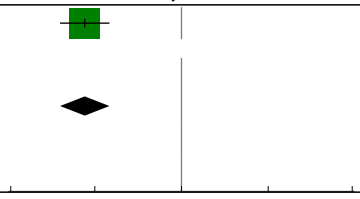
DATA AND ANALYSES

Comparison 1. Traditional Chinese patent medicine combined with Western medicine versus Western medicine alone

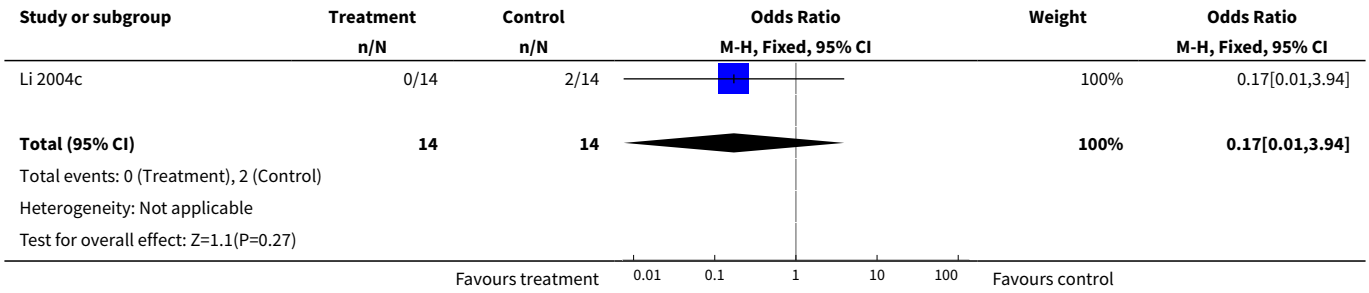
Outcome or subgroup title	No. of studies	No. of partici-pants	Statistical method	Effect size
1 Dosage of corticosteroid at the end of treatment	1	28	Mean Difference (IV, Fixed, 95% CI)	-557.85 [-700.27, -415.43]
2 Adverse events	1	28	Odds Ratio (M-H, Fixed, 95% CI)	0.17 [0.01, 3.94]

Analysis 1.1. Comparison 1 Traditional Chinese patent medicine combined with Western medicine versus Western medicine alone, Outcome 1 Dosage of corticosteroid at the end of treatment.

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Li 2004c	14	699.3 (111.7)	14	1257.1 (247.9)		100%	-557.85[-700.27,-415.43]
Total ***	**14**		**14**			**100%**	**-557.85[-700.27,-415.43]**
Heterogeneity: Not applicable							
Test for overall effect: Z=7.68(P<0.0001)							



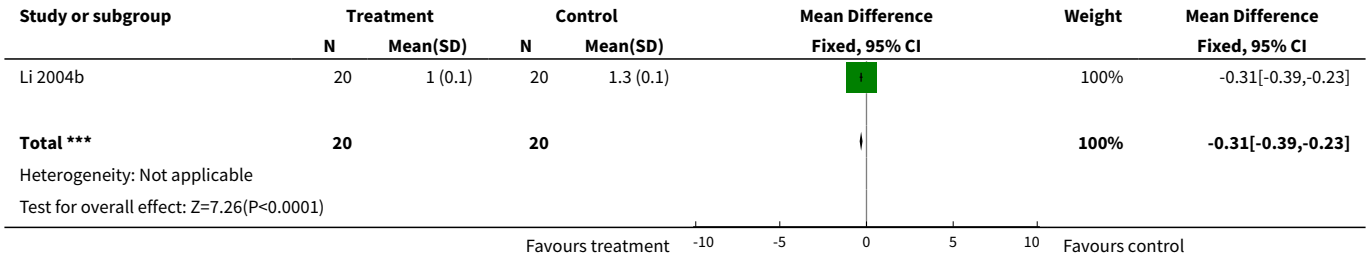
Analysis 1.2. Comparison 1 Traditional Chinese patent medicine combined with Western medicine versus Western medicine alone, Outcome 2 Adverse events.



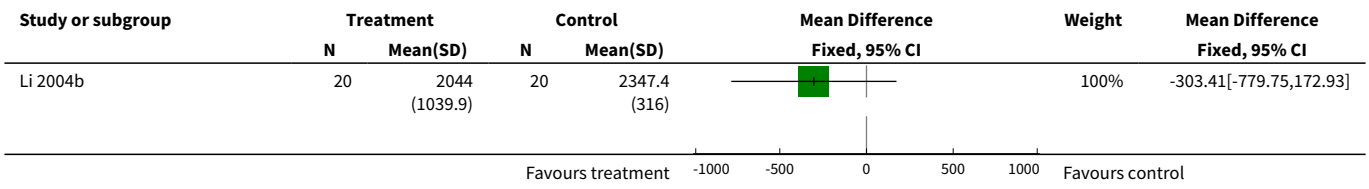
Comparison 2. Chinese compound herbs combined with Western medicine versus Western medicine alone

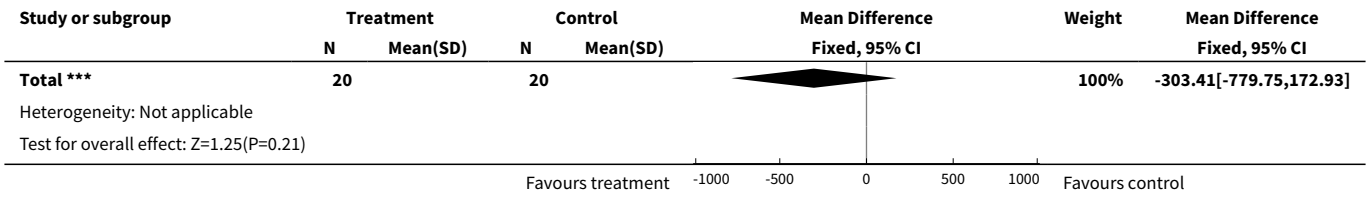
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Chest X-ray score: absorption of pulmonary infiltration	1	40	Mean Difference (IV, Fixed, 95% CI)	-0.31 [-0.39, -0.23]
2 Average daily dose of corticosteroid (mg)	1	40	Mean Difference (IV, Fixed, 95% CI)	-303.41 [-779.75, 172.93]
3 Quality of life (including decreased activity, dyspnoea and depression)	1	40	Mean Difference (IV, Fixed, 95% CI)	-1.26 [-1.89, -0.63]

Analysis 2.1. Comparison 2 Chinese compound herbs combined with Western medicine versus Western medicine alone, Outcome 1 Chest X-ray score: absorption of pulmonary infiltration.

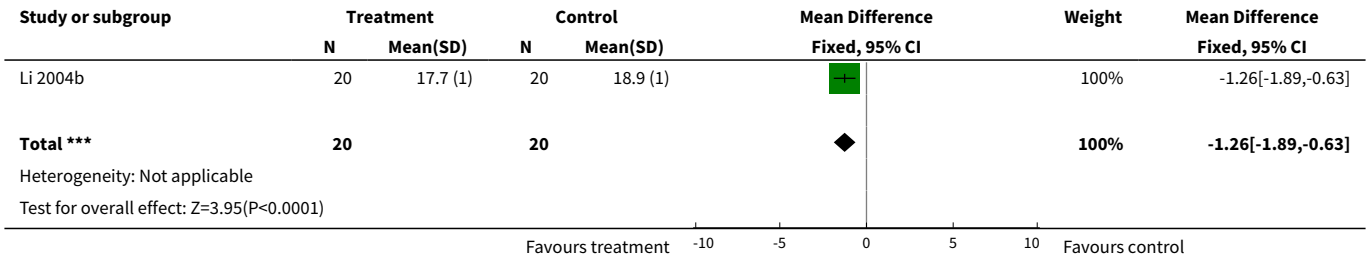


Analysis 2.2. Comparison 2 Chinese compound herbs combined with Western medicine versus Western medicine alone, Outcome 2 Average daily dose of corticosteroid (mg).





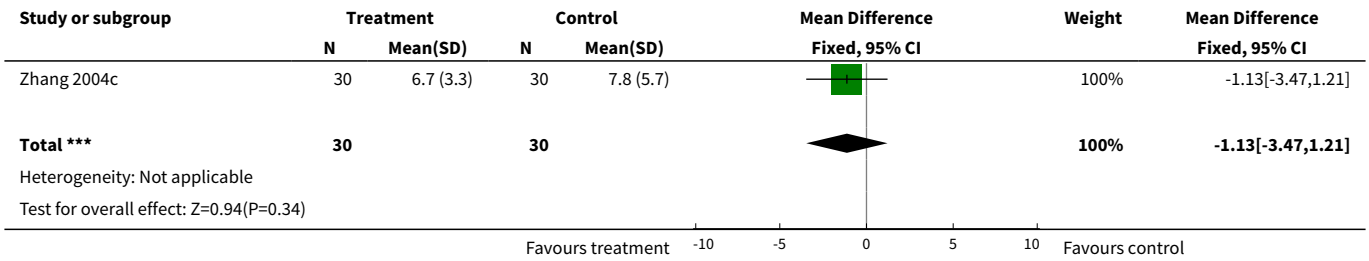
Analysis 2.3. Comparison 2 Chinese compound herbs combined with Western medicine versus Western medicine alone, Outcome 3 Quality of life (including decreased activity, dyspnoea and depression).



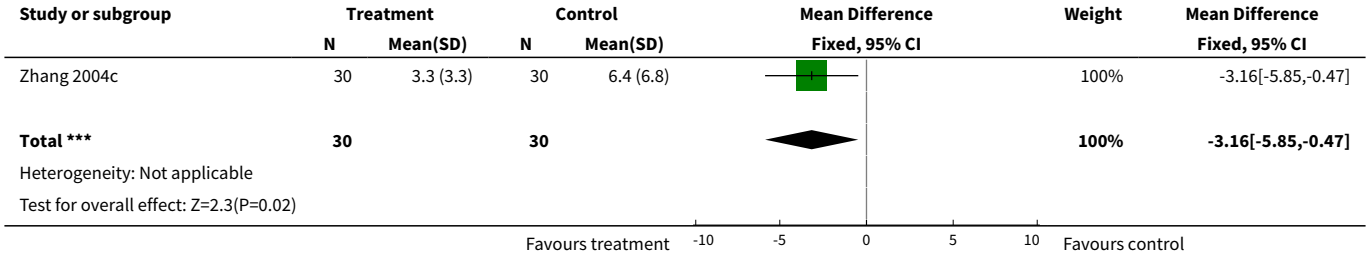
Comparison 3. Compound Chinese herbs combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Days to loss of fever	1	60	Mean Difference (IV, Fixed, 95% CI)	-1.13 [-3.47, 1.21]
2 Chest X-ray score: absorption of pulmonary infiltration	1	60	Mean Difference (IV, Fixed, 95% CI)	-3.16 [-5.85, -0.47]
3 Duration of corticosteroid treatment (days)	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.06 [-5.56, 5.44]
4 Mortality	1	60	Risk Ratio (M-H, Fixed, 95% CI)	0.2 [0.01, 4.00]

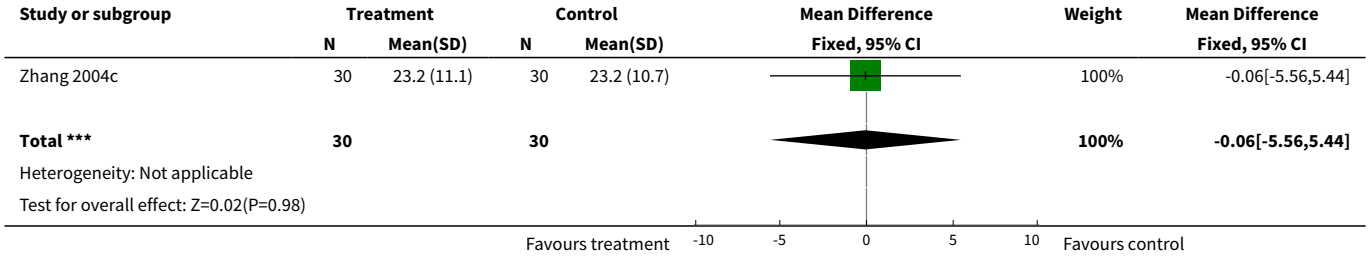
Analysis 3.1. Comparison 3 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 1 Days to loss of fever.



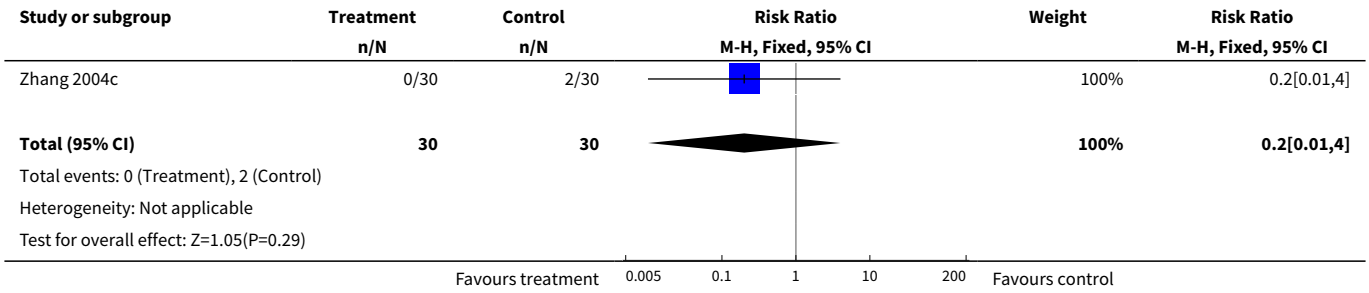
Analysis 3.2. Comparison 3 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 2 Chest X-ray score: absorption of pulmonary infiltration.



Analysis 3.3. Comparison 3 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 3 Duration of corticosteroid treatment (days).



Analysis 3.4. Comparison 3 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 4 Mortality.

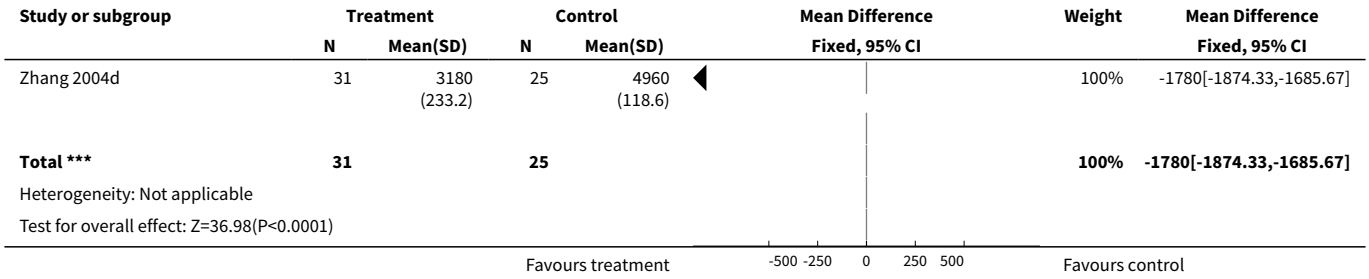


Comparison 4. No. 4 Feidian combined with Western medicine versus Western medicine alone

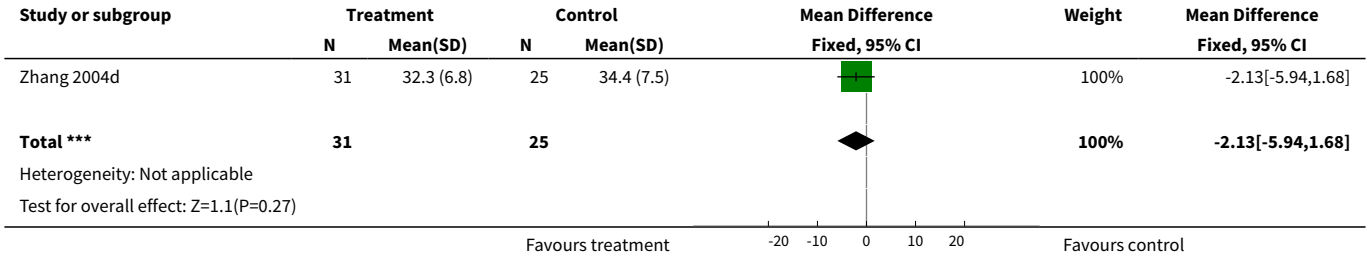
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Average dosage of corticosteroid (mg)	1	56	Mean Difference (IV, Fixed, 95% CI)	-1780.0 [-1874.33, -1685.67]
2 Duration of hospital stay (days)	1	56	Mean Difference (IV, Fixed, 95% CI)	-2.13 [-5.94, 1.68]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3 Symptom duration	1		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 Dyspnoea	1	38	Odds Ratio (M-H, Fixed, 95% CI)	1.5 [0.41, 5.43]
3.2 Cough	1	30	Odds Ratio (M-H, Fixed, 95% CI)	1.29 [0.30, 5.43]
3.3 Cyanopathy	1	16	Odds Ratio (M-H, Fixed, 95% CI)	3.2 [0.23, 45.19]

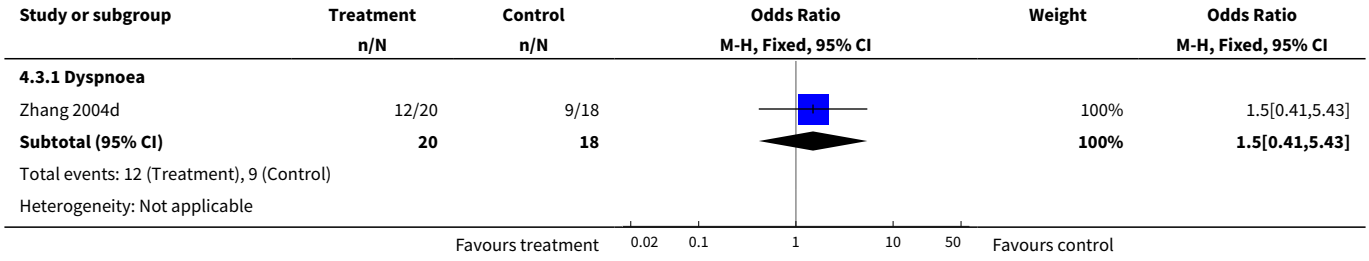
Analysis 4.1. Comparison 4 No. 4 Feidian combined with Western medicine versus Western medicine alone, Outcome 1 Average dosage of corticosteroid (mg).

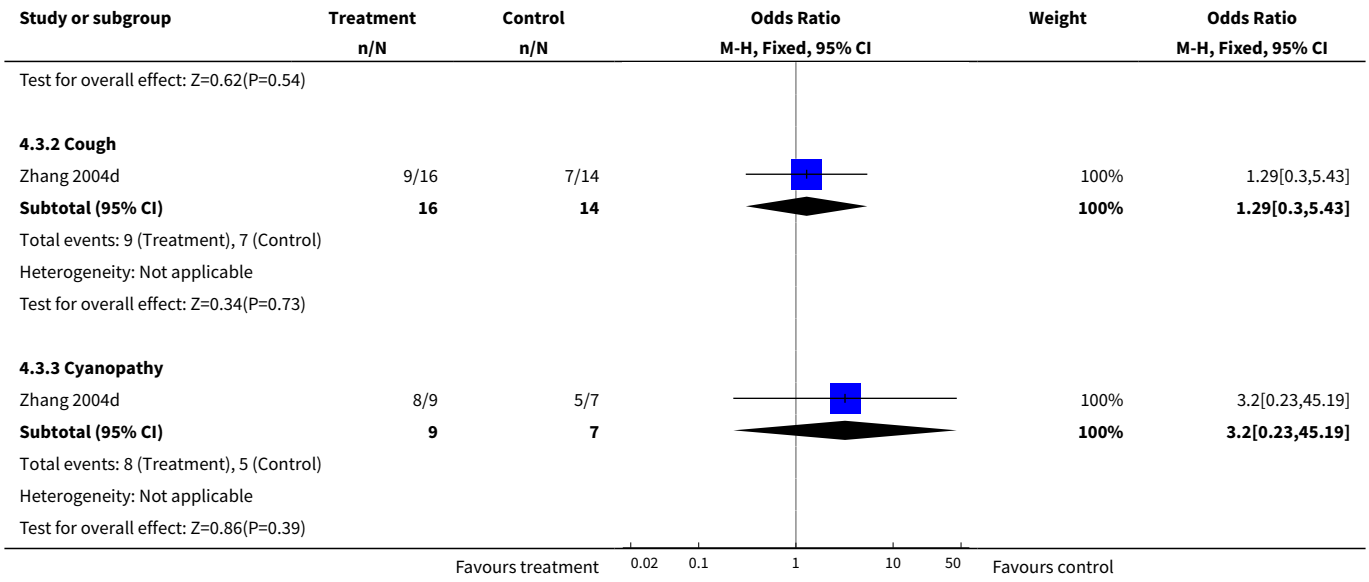


Analysis 4.2. Comparison 4 No. 4 Feidian combined with Western medicine versus Western medicine alone, Outcome 2 Duration of hospital stay (days).



Analysis 4.3. Comparison 4 No. 4 Feidian combined with Western medicine versus Western medicine alone, Outcome 3 Symptom duration.

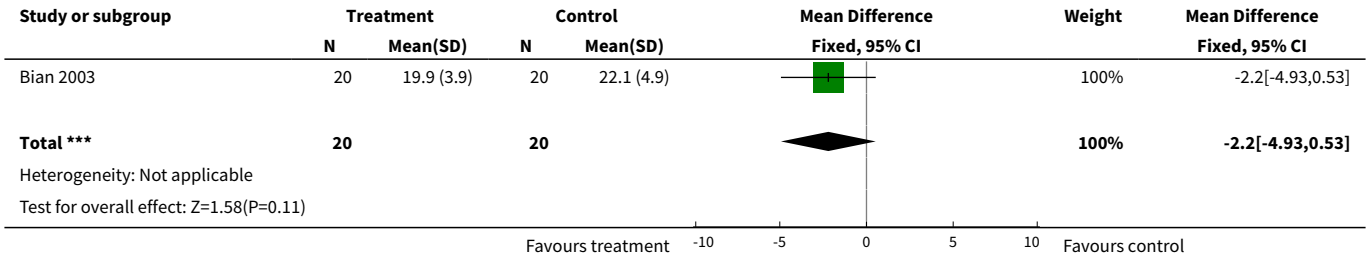




Comparison 5. Compound Chinese herbs combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Quality of life (including decreased activity, dyspnoea and depression)	1	40	Mean Difference (IV, Fixed, 95% CI)	-2.20 [-4.93, 0.53]

Analysis 5.1. Comparison 5 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 1 Quality of life (including decreased activity, dyspnoea and depression).



Comparison 6. Compound Chinese herbs combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Quality of life improvement	1	2	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 6.1. Comparison 6 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 1 Quality of life improvement.

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Zhang 2004a	1	0 (0)	1	0 (0)			Not estimable
Total ***	**1**		**1**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							

Favours treatment — Favours control

Comparison 7. Compound Chinese herbs combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Days to loss of fever	1	48	Mean Difference (IV, Fixed, 95% CI)	-0.09 [-2.95, 2.77]
2 Duration of absorption of pulmonary infiltration (days)	1	48	Mean Difference (IV, Fixed, 95% CI)	-5.0 [-11.97, 1.97]
3 Duration of corticosteroid treatment (days)	1	48	Mean Difference (IV, Fixed, 95% CI)	-8.29 [-15.39, -1.19]
4 Duration of hospital stay (days)	1	48	Mean Difference (IV, Fixed, 95% CI)	-8.66 [-15.66, -1.66]

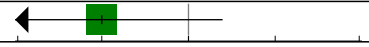
Analysis 7.1. Comparison 7 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 1 Days to loss of fever.

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Li 2004a	24	5.8 (4.2)	24	5.9 (5.8)		100%	-0.09[-2.95,2.77]
Total ***	**24**		**24**			**100%**	**-0.09[-2.95,2.77]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.06(P=0.95)							

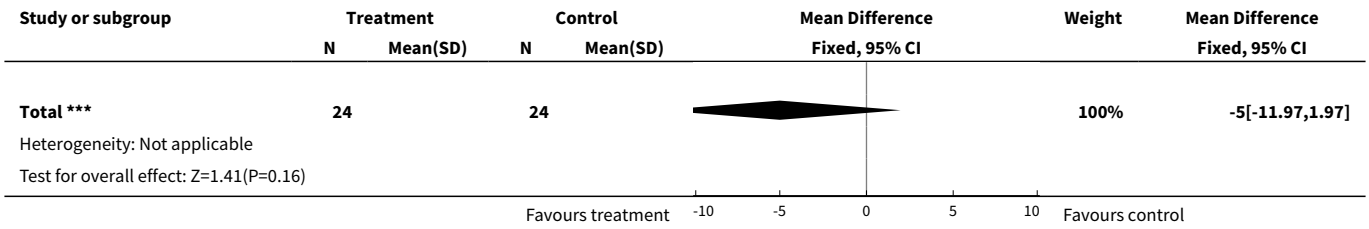
Favours treatment — Favours control

Analysis 7.2. Comparison 7 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 2 Duration of absorption of pulmonary infiltration (days).

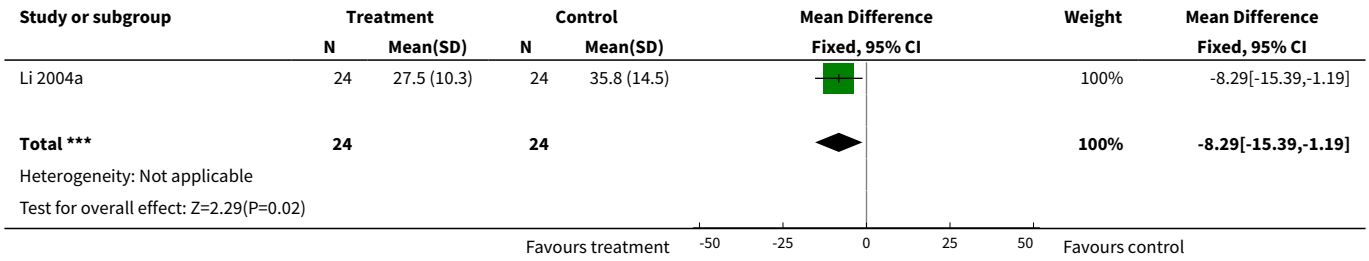
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Li 2004a	24	18.9 (9.2)	24	23.9 (14.8)		100%	-5[-11.97,1.97]



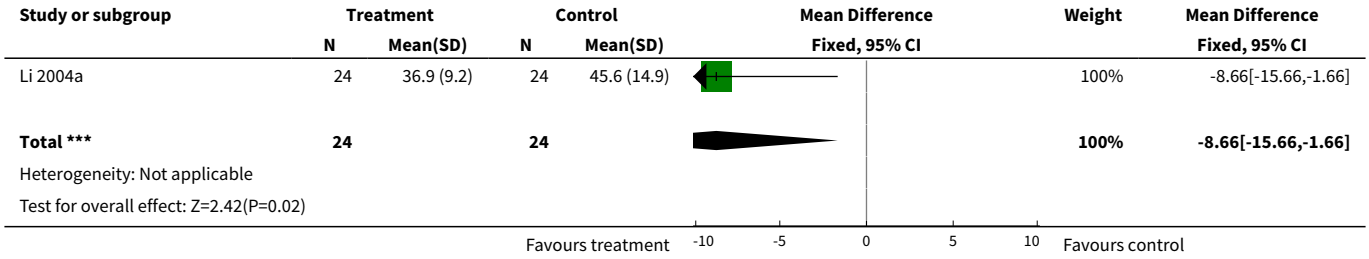
Favours treatment — Favours control



Analysis 7.3. Comparison 7 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 3 Duration of corticosteroid treatment (days).



Analysis 7.4. Comparison 7 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 4 Duration of hospital stay (days).



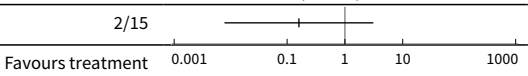
Comparison 8. Compound Chinese herbs combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of partici-pants	Statistical method	Effect size
1 Mortality	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2 Chest X-ray score: absorption of pulmonary infiltration	1	34	Mean Difference (IV, Fixed, 95% CI)	-2.77 [-4.76, -0.78]
3 Average dosage of corticos-teroid (mg)	1	34	Mean Difference (IV, Fixed, 95% CI)	-82.52 [-91.36, -73.68]
4 Duration of corticosteroid treatment (days)	1	34	Mean Difference (IV, Fixed, 95% CI)	-2.67 [-5.01, -0.33]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5 Symptom scores	1	34	Mean Difference (IV, Fixed, 95% CI)	-1.19 [-2.80, 0.42]

Analysis 8.1. Comparison 8 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 1 Mortality.

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Hou 2004	0/19	2/15		0%	0.16[0.01,3.1]



Analysis 8.2. Comparison 8 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 2 Chest X-ray score: absorption of pulmonary infiltration.

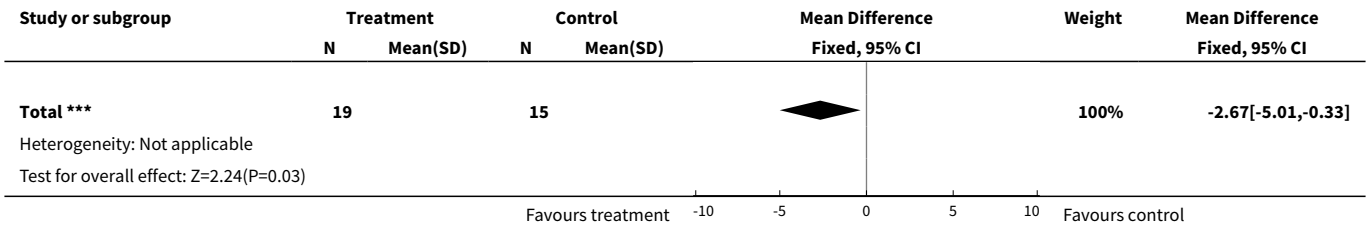
Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Hou 2004	19	3.2 (2.7)	15	5.9 (3.1)		100%	-2.77[-4.76,-0.78]
Total ***	**19**		**15**			**100%**	**-2.77[-4.76,-0.78]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.73(P=0.01)							

Analysis 8.3. Comparison 8 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 3 Average dosage of corticosteroid (mg).

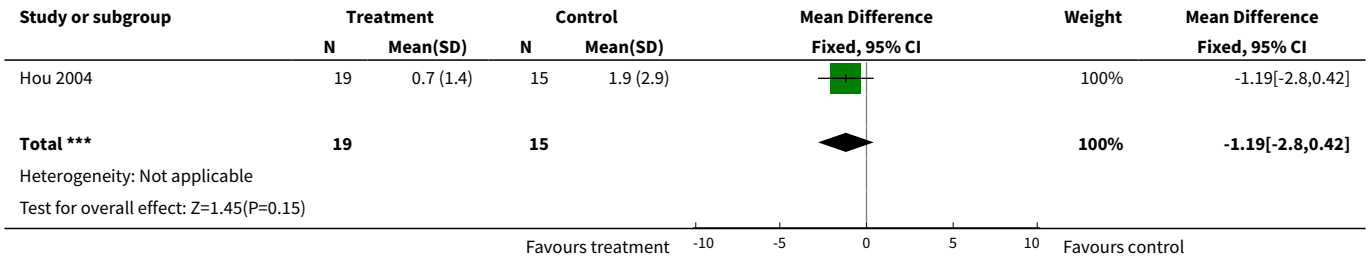
Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Hou 2004	19	157.5 (14.7)	15	240 (11.6)		100%	-82.52[-91.36,-73.68]
Total ***	**19**		**15**			**100%**	**-82.52[-91.36,-73.68]**
Heterogeneity: Not applicable							
Test for overall effect: Z=18.3(P<0.0001)							

Analysis 8.4. Comparison 8 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 4 Duration of corticosteroid treatment (days).

Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Hou 2004	19	9.9 (3.5)	15	12.6 (3.5)		100%	-2.67[-5.01,-0.33]



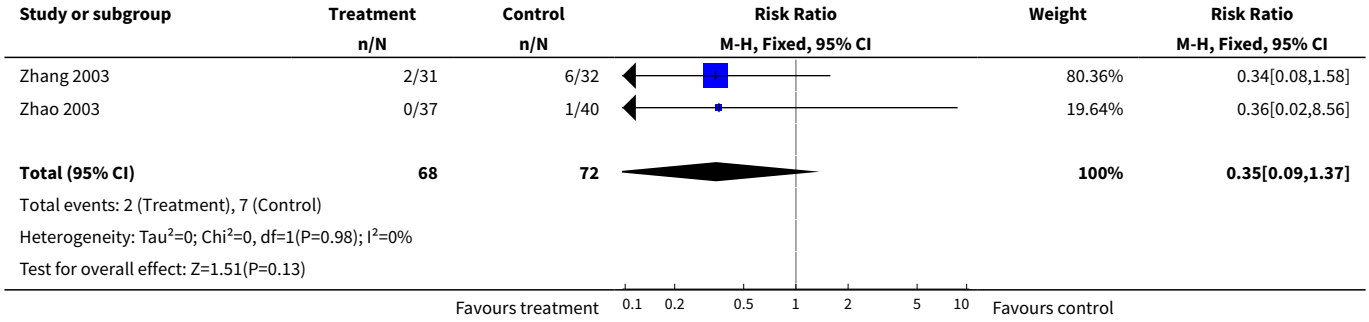
Analysis 8.5. Comparison 8 Compound Chinese herbs combined with Western medicine versus Western medicine alone, Outcome 5 Symptom scores.



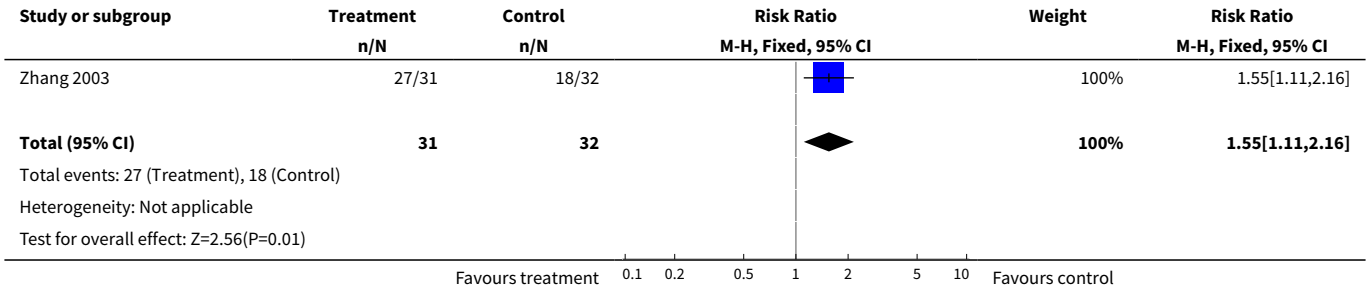
Comparison 9. No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Mortality	2	140	Risk Ratio (M-H, Fixed, 95% CI)	0.35 [0.09, 1.37]
2 Chest X-ray: absorption of pulmonary infiltration	1	63	Risk Ratio (M-H, Fixed, 95% CI)	1.55 [1.11, 2.16]
3 Duration of absorption of pulmonary infiltration (days)	1	28	Mean Difference (IV, Fixed, 95% CI)	-2.20 [-9.72, 5.32]
4 Average dosage of corticosteroid (mg)	1	35	Mean Difference (IV, Fixed, 95% CI)	75.0 [-366.27, 516.27]
5 Dosage of corticosteroid at the end of treatment	1	63	Mean Difference (IV, Fixed, 95% CI)	-102.39 [-219.18, 14.40]
6 Duration of corticosteroid treatment (days)	2	91	Mean Difference (IV, Fixed, 95% CI)	-1.85 [-3.87, 0.18]
7 Symptom score	1	63	Mean Difference (IV, Fixed, 95% CI)	-5.43 [-7.17, -3.69]
8 Symptom duration	1	165	Odds Ratio (M-H, Fixed, 95% CI)	1.93 [1.00, 3.73]
9 Days to loss of fever	1	63	Mean Difference (IV, Fixed, 95% CI)	-2.5 [-4.10, -0.90]

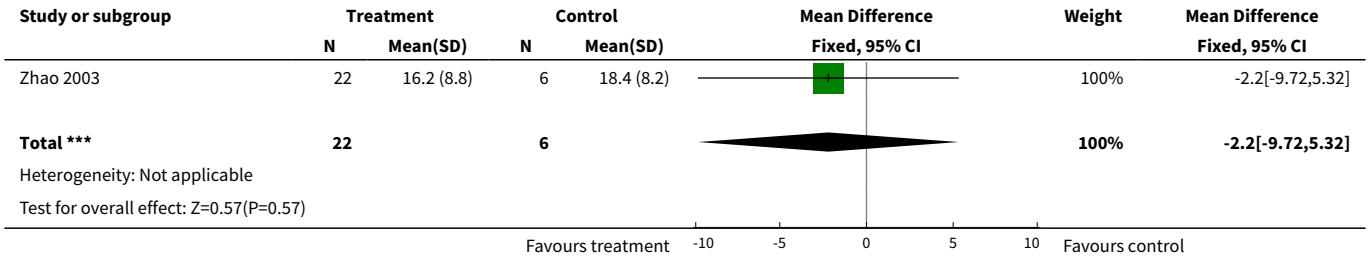
Analysis 9.1. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 1 Mortality.



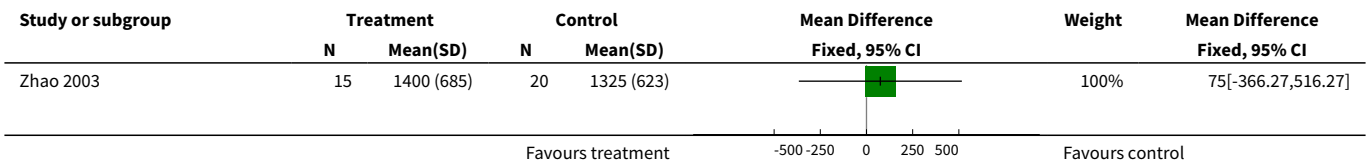
Analysis 9.2. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 2 Chest X-ray: absorption of pulmonary infiltration.

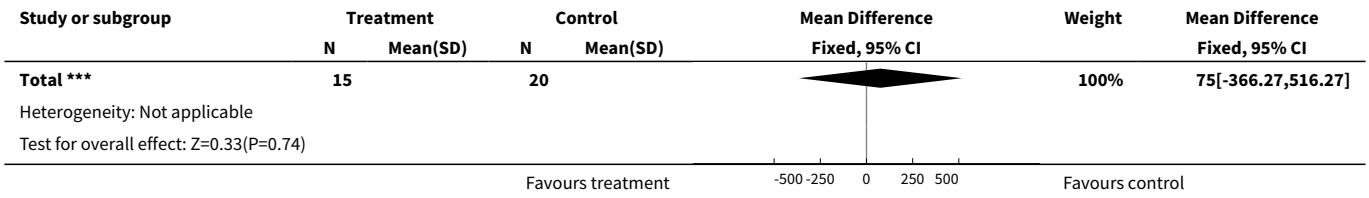


Analysis 9.3. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 3 Duration of absorption of pulmonary infiltration (days).

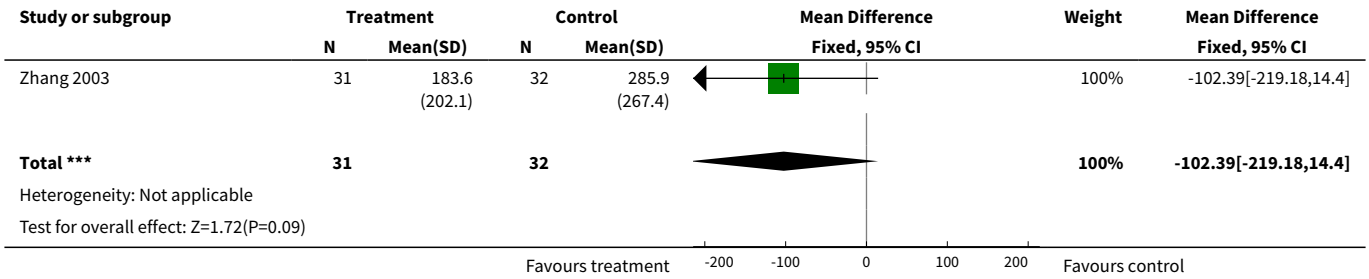


Analysis 9.4. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 4 Average dosage of corticosteroid (mg).

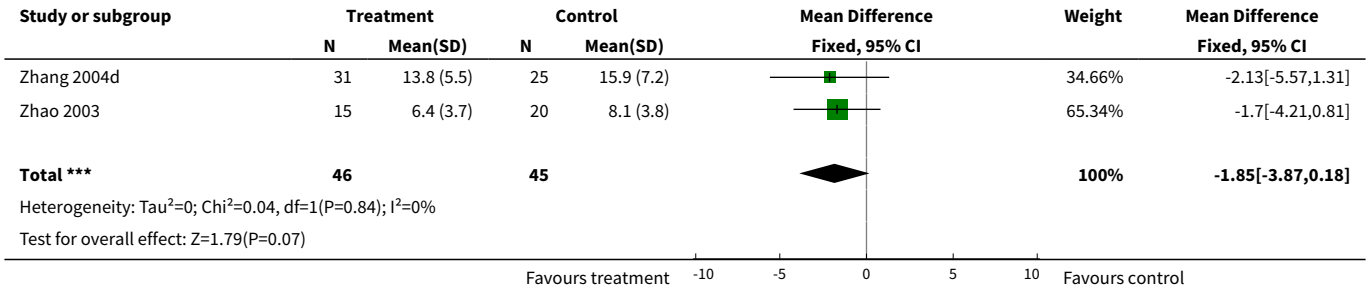




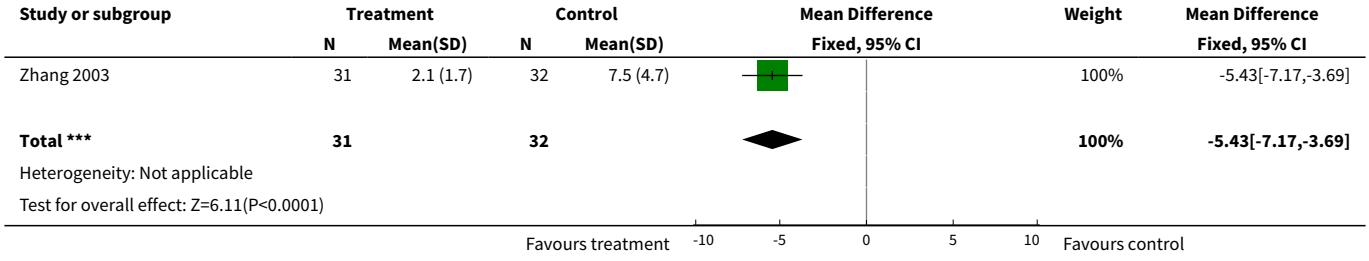
Analysis 9.5. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 5 Dosage of corticosteroid at the end of treatment.



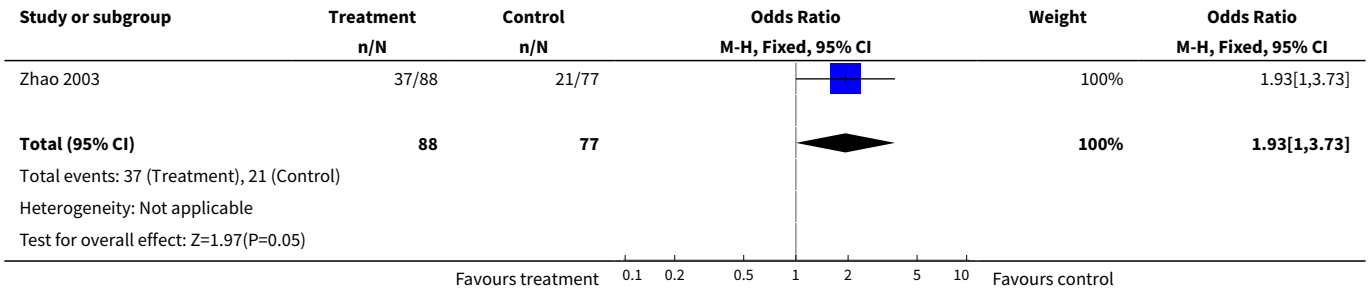
Analysis 9.6. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 6 Duration of corticosteroid treatment (days).



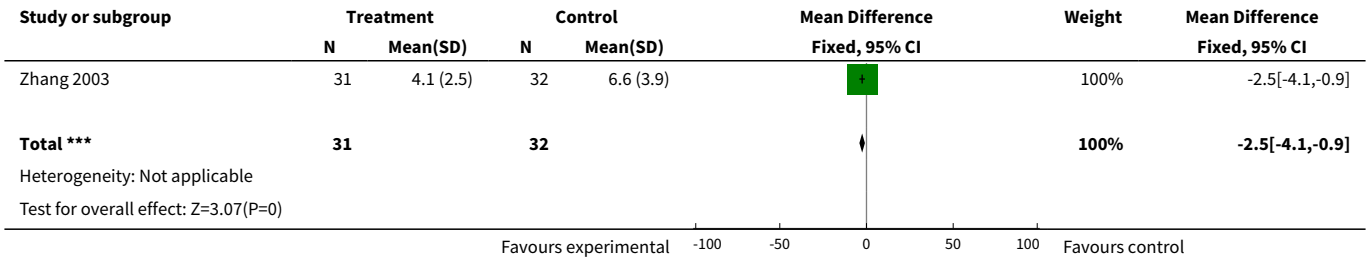
Analysis 9.7. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 7 Symptom score.



Analysis 9.8. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 8 Symptom duration.



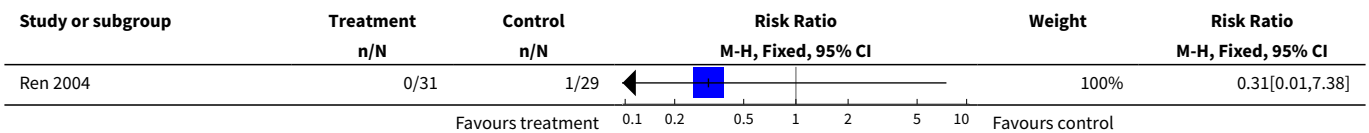
Analysis 9.9. Comparison 9 No. 1, 2, 3 of Feidian combined with Western medicine versus Western medicine alone, Outcome 9 Days to loss of fever.

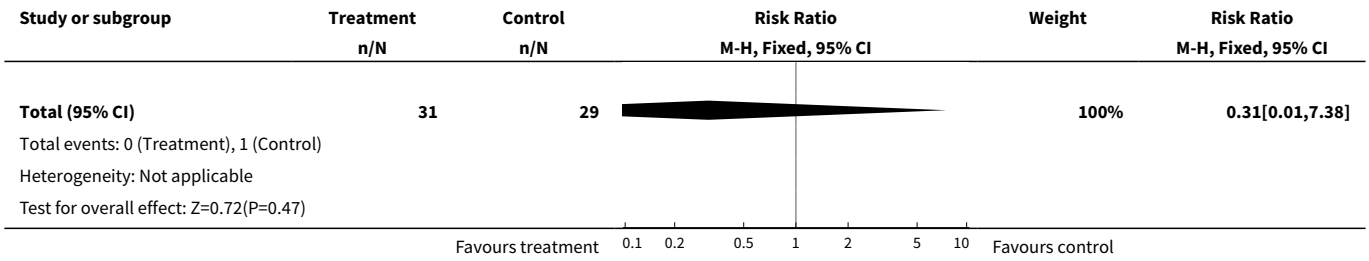


Comparison 10. Compound Chinese herbs combined with Western medicines versus Western medicines alone

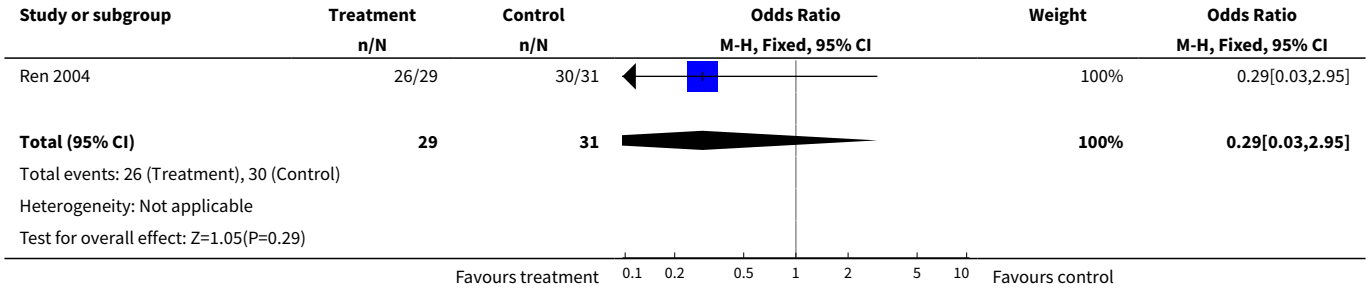
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Mortality	1	60	Risk Ratio (M-H, Fixed, 95% CI)	0.31 [0.01, 7.38]
2 Chest X-ray:absorption of pulmonary infiltration	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.29 [0.03, 2.95]
3 Dosage of corticosteroid at the end of treatment	1	57	Mean Difference (IV, Fixed, 95% CI)	-62.0 [-74.21, -49.79]
4 Adverse events	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 10.1. Comparison 10 Compound Chinese herbs combined with Western medicines versus Western medicines alone, Outcome 1 Mortality.

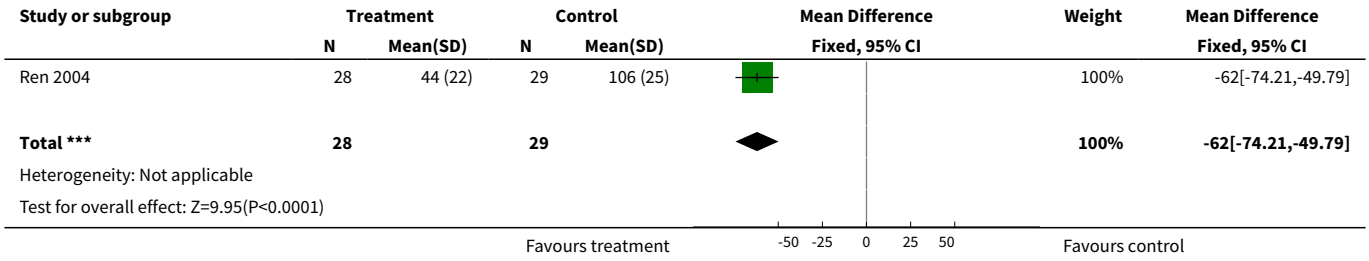




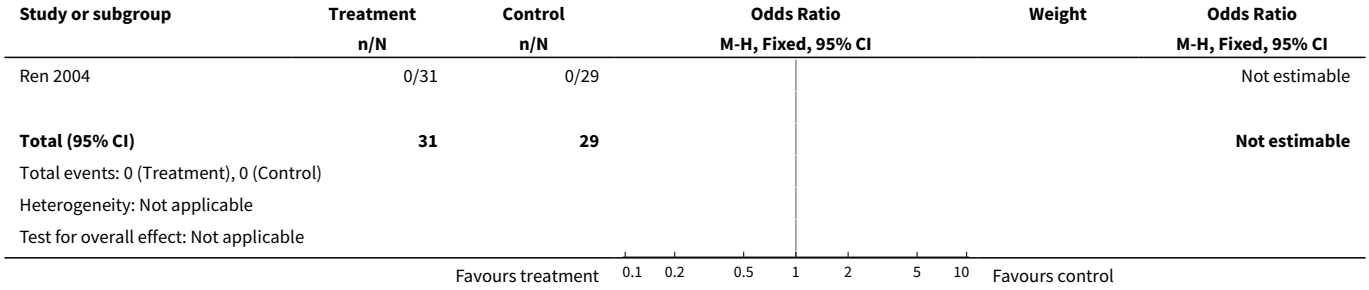
Analysis 10.2. Comparison 10 Compound Chinese herbs combined with Western medicines versus Western medicines alone, Outcome 2 Chest X-ray:absorption of pulmonary infiltration.



Analysis 10.3. Comparison 10 Compound Chinese herbs combined with Western medicines versus Western medicines alone, Outcome 3 Dosage of corticosteroid at the end of treatment.



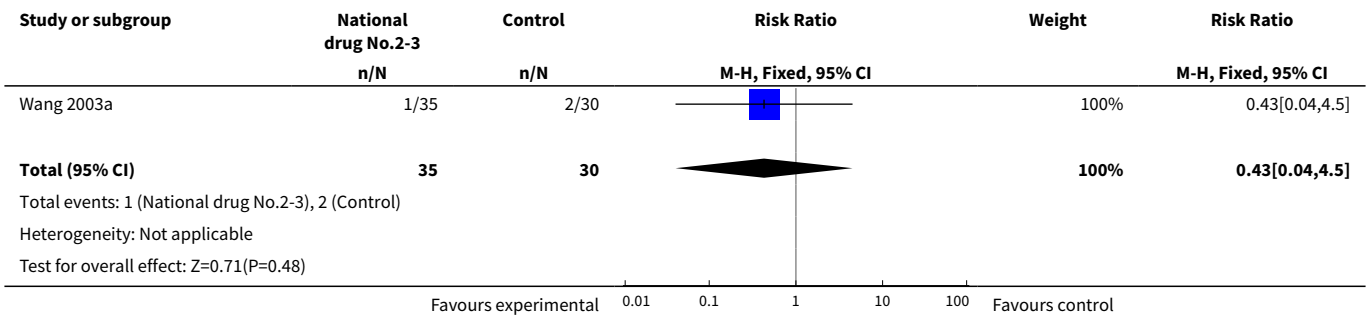
Analysis 10.4. Comparison 10 Compound Chinese herbs combined with Western medicines versus Western medicines alone, Outcome 4 Adverse events.



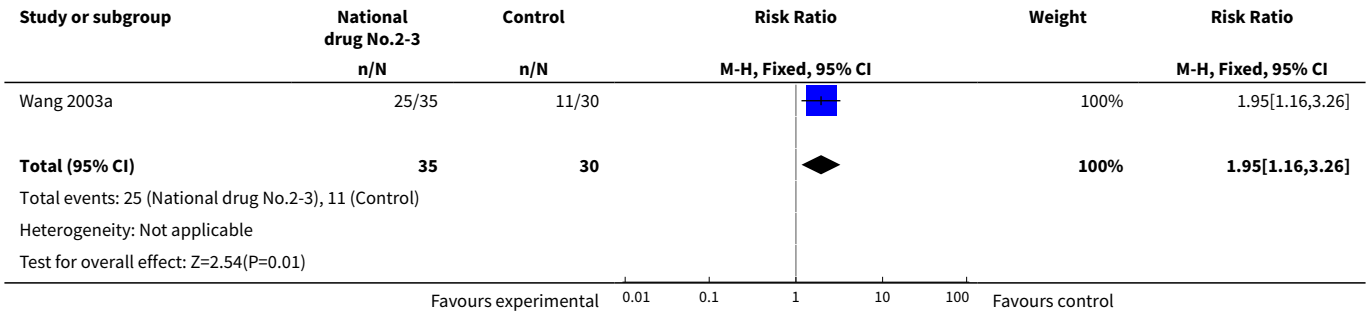
Comparison 11. National drug No. 2-3 combined with Western medicine versus Western medicine alone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Mortality	1	65	Risk Ratio (M-H, Fixed, 95% CI)	0.43 [0.04, 4.50]
2 Cases of absorption of pulmonary infiltration	1	65	Risk Ratio (M-H, Fixed, 95% CI)	1.95 [1.16, 3.26]

Analysis 11.1. Comparison 11 National drug No. 2-3 combined with Western medicine versus Western medicine alone, Outcome 1 Mortality.



Analysis 11.2. Comparison 11 National drug No. 2-3 combined with Western medicine versus Western medicine alone, Outcome 2 Cases of absorption of pulmonary infiltration.



ADDITIONAL TABLES

Table 1. Details of Chinese herbs for severe acute respiratory syndrome (SARS)

Number	Name	Reference resource	Formula	Route	Duration	Times (times/d)	Dose (ml/d)	Total dose
1	Compound herbs No. 1	Bian 2003	Xiyangshen (Panax quinquenfolium L.) 6 g, Maidong (Ophiopogan japonicus (Thunb.) Ker-Gawl 12 g, Wuweizi (Schisandra chinensis (Turcz.) Baill 6 g, Shenghuangqi (Radix Astragalus membranacers) 18 g, Polygonatum odoratum (Mill.) Druce 12 g, Pollen 12 g, Baishu (Atractylodes macrocephala Koidz.) 9 g, Fuling (Sclerotium Poriacocos) 12 g, Shangye (Morus alba L.) 12 g, Quandanggui (Angelica sinensis) 9 g, Baisuo (Paeonia lactiflora Pall.) 12 g, Chuanqiong (Ligusticum chuanxiong Hort.) 12 g, Heye (Nelumbo nucifera Gaertn.) 10 g, Liuyishan 10 g	Oral				
	Compound herbs No. 2		Shenghuangqi (Radix Astragalus membranacers) 30 g, Dangshen (Radix Codonopsis pilosula) 15 g, Chaobaishu (Atractylodes macrocephala Koidz.) 15 g, Yufuling (Poria cocos (Schw.) 15 g, Caihu (Bupleurum chinense DC.) 9 g, Baisuo (Paeonia lactiflora Pall.) 12 g, Danggui (Angelica sinensis) 9 g, Muxiang (Aucklandia lappa Decne) 12 g, Sharen (Amomum villosum Lour) 6 g, Chengpi (Citrus reticulate Blanco) 12 g, Qingbanxia (Pinellia ternate (Thunb Breit) 9 g, Huoxiang (Agastache rugosa (Fisch. Et Mey.) O.Ktze) 10 g, Jiaosanxian 10 g					
	Compound herbs No. 3		Xiyangshen (Panax quinquenfolium L.) 3 g, Shashen 15 g, Maidong (Ophiopogon japonicus (Thunb.) Ker-Gawl.) 12 g, Caihu (Bupleurum chinense DC.) 9 g, Huangqi (Radix Astragalus membranacers) 12 g, Shang ye or white mulberry leaf (Morus alba L.) 15 g, Shangpi or white myberry bark (Morus alba L.) 15 g, Digupi (Lyrmeleon chinense Mill.) 12 g, Qinghao (Attenmisa annua L.) 15 g, Lugeng (Phragmites communis Trin.) 15 g, Maogeng (Imperata cylindrica Beauv. Var. major (Nees) C.E.Hubb.) 15 g, Dangkui (Angelica sinensis (Oliv. Diels)) 9 g, Baishuo (Paeonia lactiflora Pall.) 12 g, Qingbanxia (Pinellia ternate (Thumb Breit.) 9 g, Chaomaiya (Hordeum vulgare L.) 15 g, Chaoguya (Oryza sativa L.) 15 g					
2	National drug No. 2	Wang 2003	Shengshigao, Huangqing (Scutellaria baicalensis), Zicao (Lithospermum erythrorhizon Sieb. Er Zucc)	Oral	8 days	2	200	1600 ml
	National drug No. 3		Shengdi, Yuansheng, Jingyinghuan (Loinicera japonica Thunb.)	Oral	9 days	2	200	1800 ml

Table 1. Details of Chinese herbs for severe acute respiratory syndrome (SARS) *(Continued)*

	National drug No. 4		Taizisheng (Pseudostellaria heterophylla (Miq.) Pax er Pax er Hoffm), shasheng, dangsheng (Loinicera japonica Thunb.)	Oral				
3	Kangfeidian No. 1, 2, 3	Zhao 2003 and Zhang 2003	No. 1 of Feidian: Shengshigao 45 g, Caihu 15 g, Zhimu 10 g, Beimu 10 g, Huangqin 15 g, Qinghao 15 g, Danpi 10 g, Chisuo 12 g, Liangqiao 15g, Shanyirou 30 g, Changshu 15 g, Huoxiang 10 g, Yiyiren 15 g, Chaoxingren 10 g; No. 2 of Feidian: Huangqin 15 g, Qinghao 15 g, Guolou 30 g, Diangshen 15 g, Xuanfuhua 10 g, Yujing 10 g, Changpu 10 g, Pijie 12 g, Chansha 15 g, Changshu 15 g, Baishu 15 g, Zhuling 15 g, Fuling 15 g, Yiyiren 15 g, Chaoxingren 10 g, Cheqianzi 10 g, Shanyurou 30 g; No. 3 of Feidian: Xiyangshen 30 g, Shenghuangqi 30 g, Shanyurou 30 g, Maidong 15 g, Zhimu 10 g, Beimu 10 g, Baijiangcao 30 g, Lianqiao 15 g, Danshen 15 g, Picao 12 g, Chansha 15 g, Yiyiren 15 g, Zhuling 15 g, Fuling 15 g, Guoloou 30 g, Ziwan 15 g	Oral	7 days	2	200	1400 ml
4	Compound Herbal formulas	Wang 2003	When the participants had a fever, the following formula was used: Zhimahuang (Ephedra sinica Stapf.) 5 g, Xingren Beiyingren (Prunus armeniaca L.) 12 g, Shengshigao 45 g, Zhimu (Anemarrhena asphodeloides Bge.) 10 g, Jingyiinghua (Loinicera japonica Thunb.) 15 g, Lianqiao (Forsythia suspense (Thumb Vahl) 12 g, Chaozhizi (Gardenia jasminoides Ellis) 12 g, Huangqing (Scutellaria baicalensis Georgi) 12 g, Shuye10 g, Yingcheng 15 g, Gegeng (Pueraria edulis Pamp.)15 g, Taizisheng (Pseudostellaria heterophylla (Miq.)) 15 g When the participants had a cough, the following formula was used: Xiyangshen (Panax quinquenfolium L.) 15 g, Maidong (Ophiopogon japonicus (Thunb.) Ker-Gawl.) 10 g, Wuweizi (Schisandra chinensis (Turcz.) Baill.) 10 g, Shanyurou (Cornus officinalis Sieb.et Zucc.) 12 g, Tinglizi (Descurainia Sophia (L.) Webb ex Prantl) 15 g, Ziyuan (Aster tatarisuc L.f.) 15 g, Baye (Eriobotrya japonica (Thumb.) Lindl.) 12 g, Dinglong (Allobophora caliginosa (Savigny) trapezoids (Ant.Duges)) 12 g, Dansheng 12 g, Chishuo Paeonua lactiflora 12 g, Jingyinghua Jingyinghuan (Loinicera japonica Thunb.) 8 g, Huangqing Huangqing (Scutellaria baicalensis) 10 g, Gualoupi (Trichosanthes kirilowii Maxim) 15 g, Guogeng (Pueraria edulis Pamp.) When the participants were in the convalescence stage, the following formula was used: Shengjingtaizisheng (Pseu-					

Table 1. Details of Chinese herbs for severe acute respiratory syndrome (SARS) *(Continued)*

			dostellaria heterophylla (Miq.)) 15 g, Maidong (Ophiopogon japonicus (Thunb.) Ker-Gawl.) 15 g, Shasheng 15 g, Chaobaishu (Atractylodes macrocephala Koidz.) 15 g, Zhibaye 15 g, Sharen (Amomum villosum Lour.) 6 g, Jiaoshanxian 30 g, Shenghuangqi (Radix Astragalus membranacers) 15 g, Guogeng (Pueraria edulis Pamp.) 15 g, Dansheng 15 g, Chengpi (Citrus reticulate Blanco) 6 g, Huangjing (Polygonatum sibiricum Red.) 15 g					
5	Kangfeidian No.	Zhang SN	Unclear					
6	Potenili	Feng 2003	Unclear	Oral	7 days	3	300	2100 ml
7	6 Chinese traditional patient medicines	Li 2003	Chuanghuning injection, Shengmai injection, Hufei Qingsha drink, Jiedu Zhitong capsule, Zhuyin Sanjie capsule, Qingshaling spray	Intravenous, oral and spray	7 to 10 days	3 times per day	See the 'Characteristics of included studies'	
8	Compound Chinese herbs (x)	Li 2004(x)	1. Yi Qi Yang Ying recipe: Xiyangshen (Panax quinquenfolium L.), Maidong (Ophiopogon japonicus (Thumb Ker-Gawl.), Wuweizi (Schisandra chinensis (Turcz.), Shenghuangqi (Radix Astragalus membranacers), Yuzhun, flower pollen et al 2. Bu Fei Jian Pi recipe: Shenghuangqi (Radix Astragalus membranacers), Dangshen (Radix Codonopsis pilosula), Chao baishu (Atractylodes macrocephala Koidz.), Yufuli (Poria cocos (Schw.), Caihu (Bupleurum chinense DC.), Baishuo (Paeonia lactiflora Pall.), Danggui (Angelica sinensis) et al 3. Yang Yin Qing Re recipe: Xiyangshen (Panax quinquenfolium L.) , Shashen, Maidong (Opiopogan japonicus (Thunb.) Ker-Gawl, Caihu (Bupleurum chinense DC.), Huangqing (Scutellaria baicalensis Georgi), Shangye, Digupi (Lyrmeleon chinense Mill.), Qinghao (Attenmisa annua L.). Modification of prescriptions was conducted according to the syndrome	Oral				
9	Compound Chinese herbs (z)	Zhang 2004	1. Yi Qi Yang Ying recipe: Taizisheng (Pseudosterllari heterophylla (Miq.) Pax er Pax er Hoffm) 30 g, Maidong (Ophiopogon japonicus (Thumb.) Ker-Gawl.) 12 g, Wuweizi (Schisandra chinensis (Turcz.) 6 g, Shenghuangqi (Radix Astragalus membranacers) 15 g, Flower pollen 12 g, Ful-					

Table 1. Details of Chinese herbs for severe acute respiratory syndrome (SARS) *(Continued)*

			ing (Sclerotium Poriacocos) 12 g, Chuangxiong (Ligusticum chuanxiong Hort.) 12 g, Quangdangui (Angelica sinenesis) 9 g, Baishuo (Paeonia lactiflora Pall) 9 g, Jiaobaishu (Atractylodes macrocephala KoidZ) 15 g, Gancao (Glycyrrhiza) 9 g, Caihu (Bupleurum chinense DC.) 12g, Liuyishan 10g 2. Bu Fei Jian Pi recipe: Shenghuangqi (Radix Astragalus membranacers) 20 g, Dangshen (Radix Codonopsis pilosula) 15 g, Chaobaishu (Atractylodes macrocephala Koidz.) 15 g, Yufuli (Poria cocos(Schw.) 15 g, Caihu (Bupleurum chinense DC.) 9 g, Danggui (Angelica sinensis) 9 g, Baishuo (Paeonia lactiflora Pall.) 12 g, Chuangxiong (Ligusticum chuanxiong Hort.) 12 g, Muxiang (Aucklandia lappa Decne) 12 g, Chengpi (Citrus reticulate Blanco) 12 g, Huoxiang (Agastache rugosa (Fisch. Et Mey) 10 g, Jiaosanxian 10 g, Sharen (Amomum villosum Lour.) 6 g 3. Yang Yin Qing Re recipe: Taizishneg (Pseudostellaria heterophylla (Miq.) Pax er Hoffm) 15 g, Shashen() 15 g, Maidong (Opiopogan japonicus (Thunb.) Ker-Gawl) 12 g, Caihu (Bupleurum chinense DC.) 9 g, Shangye (Morus alba L.) 15 g, Shangpi (Morus alba L.) 15 g, Huangqing (Scutellaria baicalensis Georgi) Digupi (Lyrmeleon chinense Mill.) 12 g, Qinghao (Attenmisa annua L.) 15 g, Lugeng (Phragmites communis Trin) 15 g, Lumao (Phragmites communis Trin) 15 g, Qingbanxia (Pinellia ternate (Thumb.) Breit) 9 g, Baisuo (Paeonia lactiflora Pall.) 12 g, Danggui (Angelica sinensis) 9 g, Huang qi (Radix Astragalus membranacers) 12 g, Liuyishan 10 g, Danpi 12 g Modification of prescriptions was conducted according to the syndrome
10	Compound Chinese herbs (j)	Li 2004 (j)	1. Yingqing heji (for normal SARS participants): Jingyinghua (Loinicera japonica Thumb) 20 g, Daqingye 20 g, Guangzong 15 g, Guogeng (Pueraria edulis Pamp) 15 g, Shuye 12 g, Jigeng 15 g, Huoxiang (Agastache rugosa (Fisch.Et Mey.) 15 g, Gancao (Glycyrrhiza) 30 g 2. Compound Yuxing heji (for severe and acute sever SARS patients): Yuxingxao 45 g, Banlangen 45 g, Huangqing (Scutellaria baicalensis) 15 g, Xingren 15 g, Caihu (Bupleurum chinense DC.) 15 g, Qinghao (Attenmisa annua L.) 15 g, Xianhecao 20 g, Zuru 15 g, Shengshigao 30 g, Zhimu (Anemarrhena asphodeloides Bge.) 20 g, Tazishen (Pseudostellaria heterophylla (Miq) Pax er Hoffm) 20 g, Shenggancao (Glycyrrhiza) 30 g

Table 1. Details of Chinese herbs for severe acute respiratory syndrome (SARS) *(Continued)*

			3. Ganqi heji (for SARS patients of recovery stage): Shenghuangqi (Angelica sinensis) 45 g, Shenggancao (Glycyrrhiza) 30 g, Taoren 30 g, Zhibiejia 30 g 4. Kangfeidiang No. 1 granule: Guanzong 20 g, Cahu (Bupleurum chinense DC.) 10 g, Wuwezi (Schisandra chinensis (Turcz.) Baill) 6 g 5. Kangfeidian No. 2 granule: Jinglianhua 10 g, Guanzong 10 g, Daqingye 10 g
11	Compound Chinese herbs (y)	Hou 2004	1. Shengsigao 30 to 50 g, Zhimu (Anemarrhena asphodeloides Bge.) 10 g, Jingyinghau (Loincera japonica Thunb.) 30 g, Rendongteng 30 g, Liangqiao (Forsythia suspense (Thumb.) Vahl) 10 g, Qianghuo 10 g, Bohe 10 g, Shenggancao (Glyrrhiza) 6 g, Lingyangjaofeng 0.3 g etc. 2. Shenghuanqi (Scutellaria baicalensis Georgi) 15 to 30 g, Shengshigao 30 g, Lingyangjiaofen 0.6 g, Tianzhuhuang 10 g, Danshen 15 to 30 g,Sanqifen 3 g 3. Taizishen (Pseudostellaria heterphylla (Miq) Pax er Hoffm) 15 g, Shenghuangqi (Scutellaria baicalensis Georgi) 15 to 30 g, Changshu 10 g, Baishu 10 g, Baibiandou 30 g, Shengyiyiren 30 g, Gualoupi (Trichosanthes kirilowii Maxim) 10 g, Sigualuo 10 g, Danshen 30 g, Baye 10 g
12	Compound Chinese herbs (ls)	Zhang 2003 (ls)	When treatment was in progress, the following recipe was used: Loulu 15 g, Liangqiao (Forsythia suspense (Thumb.) Vahl) 12 g, Jingyinghua (Loinicera japonica Thumb.) 15 g, Huangqing (Scutellaria baicalensis) 10 g, Qinghao (Attenmisa annua L.) 15 g, Shengshigao 30 g, Gualoupi (Trichosanthes kirilowii Maxim) 15 g, Zhebeimu 12 g, Shengzhizi 10 g, Cheqianzi 10 g (package), Chisuo 12 g 2. When patients were at recovery stage, the following recipe was used: Bailing capsule 15 g, Taizishen (Pseudostellaria hetrophylla (Miq.)) Paxer Hoffm) 20 g, Xuanshen 12 g, Chisuo 12 g, Lulou 15 g, Liangqiao (Forsythia suspense (Thumb.) Vahl) 12 g, Sanqifen 3 g, Jiaosanxian (tus baking Fructus hordei germinatus et crataegi massa fermentataa medicinalis) 10 g, Chaozhike 10 g, Chaoyiyiren 30 g

APPENDICES

Appendix 1. Previous search

For this first update we searched the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library* 2007, Issue 4) which contains the Acute Respiratory Infection Group's Specialised Register; MEDLINE (1966 to March 2008); EMBASE (1990 to March 2008); and Chinese Biomedical Literature (Issue 1, 2008).

We combined the following MEDLINE search strategy with phases I and II of the highly sensitive search strategy designed for the Cochrane Collaboration. The search terms were adapted for EMBASE.

MEDLINE (OVID)

1 exp Severe Acute Respiratory Syndrome
2 (severe acute respiratory syndrome or SARS).mp.
3 exp SARS Virus
4 acute respiratory syndrome.mp.
5 or 1-4
6 exp Drugs, Chinese Herbal
7 exp Medicine, Chinese Traditional
8 exp Medicine, Oriental Traditional
9 exp Plants, Medicinal
10 chinese herb$.mp.
11 chinese medicine$.mp.
12 or 6-11
13 5 and 12

We searched the CBM disc on Chinese Biomedical Literature using the following search strategy:

#1 Severe Acute Respiratory Syndrome
#2 SARS
#3 Herb*
#4 (#1 or #2) and #3

Appendix 2. Embase.com search strategy

#11. #4 AND #10
#10. #5 OR #6 OR #7 OR #8 OR #9
#9. (chinese NEAR/3 (herb* OR medicin*)):ab,ti
#8. 'medicinal plant'/exp
#7. 'oriental medicine'/exp
#6. 'herbaceous agent'/exp
#5. 'chinese medicine'/exp
#4. #1 OR #2 OR #3
#3. 'severe acute respiratory syndrome':ab,ti OR sars:ab,ti OR 'acute respiratory syndrome':ab,ti
#2. 'sars coronavirus'/exp
#1. 'severe acute respiratory syndrome'/exp

Appendix 3. CINAHL (Ebscohost) search strategy

S13 S6 and S12
S12 S7 or S8 or S9 or S10 or S11
S11 TI (chinese N3 (herb* or medicin* or plant*)) OR AB (chinese N3 (herb* or medicin* or plant*))
S10 (MH "Plants, Medicinal+")
S9 (MH "Medicine, Oriental Traditional+")
S8 (MH "Medicine, Chinese Traditional+")
S7 (MH "Drugs, Chinese Herbal")
S6 S1 or S2 or S3 or S4 or S5
S5 TI acute respiratory syndrom* OR AB acute respiratory syndrom*
S4 TI (sars or sars-cov) OR AB (sars or sars-cov)
S3 TI severe acute respiratory syndrom* OR AB severe acute respiratory syndrom*
S2 (MH "SARS Virus")
S1 (MH "Severe Acute Respiratory Syndrome")

Appendix 4. Chinese Biomedical Literature search strategy

We searched the CBM disc on Chinese Biomedical Literature using the following search strategy:

#1 Severe Acute Respiratory Syndrome
#2 SARS
#3 Herb*
#4 (#1 or #2) and #3

WHAT'S NEW

Date	Event	Description
26 March 2012	New search has been performed	Searches updated
26 March 2012	New citation required but conclusions have not changed	No new trials were included or excluded in this updated review

HISTORY

Protocol first published: Issue 3, 2004
Review first published: Issue 1, 2006

Date	Event	Description
9 September 2010	Amended	Contact details updated.
5 August 2010	Amended	Contact details updated.
5 March 2010	New search has been performed	Searches conducted. No new trials were included or excluded.
29 March 2008	New search has been performed	Searches conducted. In the 2008 update we included one systematic review of Western medicine for SARS (Stockman 2006) and found one randomised controlled trial (RCT) of integrated Western and Chinese medicine for SARS (Chen 2006). We excluded this RCT because the outcome measure did not meet the inclusion criteria. The conclusions remained unchanged.
9 March 2008	Amended	Converted to new review format.
31 August 2005	New search has been performed	Searches conducted.

CONTRIBUTIONS OF AUTHORS

XM Liu (XL): conceived the idea for the review, designed and drafted the review, developed the search strategy and updated the review.
MM Zhang (MZ): co-conceived the idea for the review, validated the quality assessment of trials and data extraction and revised the review.
L He (LH): developed the search strategy and updated the review.
YP Li (YL): co-conceived the idea for the review.

DECLARATIONS OF INTEREST

None known.

SOURCES OF SUPPORT

Internal sources

- Chinese Cochrane Center and West China Hospital of Sichuan University, China.

External sources

- Chinese Medical Board of New York (CMB), China.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We made some changes to the protocol.

We did not analyse mortality for different age groups because there were only one or two studies in each group.

We divided symptom improvement outcome measures into three categories: days to loss of fever, symptom scores and symptom duration, because no trial used international or domestic standard measures.

We divided absorption of pulmonary infiltration outcome measures into three categories: cases of absorption of pulmonary infiltration, duration in days of absorption of pulmonary infiltration and chest X-ray score for absorption of pulmonary infiltration, as no standard measures were used for reporting absorption of pulmonary infiltration.

We divided corticosteroid dosage outcome measures into the following three categories: average daily dose of corticosteroid, dosage of corticosteroid at the end of treatment and days of corticosteroid treatment, as no standard measures were used for reporting the dosage of corticosteroids.

We added number of days in hospital as an economic outcome measure. We did not conduct funnel plot and subgroup analysis because of the small number of included trials in each group. We also did not conduct a sensitivity analysis because the quality of the included trials was low.

INDEX TERMS

Medical Subject Headings (MeSH)

Adrenal Cortex Hormones [*therapeutic use]; Drug Therapy, Combination [methods]; Drugs, Chinese Herbal [*therapeutic use]; Phytotherapy [*methods]; Quality of Life; Randomized Controlled Trials as Topic; Severe Acute Respiratory Syndrome [*drug therapy] [mortality]

MeSH check words

Humans