Herbal medicines for asthma: a systematic review

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Authors' objectives
To determine if there is any evidence for the clinical efficacy of herbal preparations for the treatment of asthma symptoms.

Searching
MEDLINE, PubMed, the Cochrane Library and EMBASE were searched from their inception to December 1999. The search terms used were 'Ayurvedic', 'asthma', 'herb*' and 'traditional Chinese medicine', as well as any individual herb name cited in the asthma literature. Researchers in the field were contacted and the authors' own files were searched. The reference lists of the located articles were also examined. Studies reported in any language were considered.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (parallel or crossover design) were included.

Specific interventions included in the review
The inclusion criteria for the interventions were not stated. The interventions included in the review were: traditional Chinese preparations, i.e. Gingko biloba, Ligusticum wallichii (L. wallichii), strengthening body resistance method (SBR), reinforcing kidney and invigorating spleen principle (RKISP), invigorating kidney for preventing asthma (IKPA) tablets, and Wenyang Tonglulo mixture;

traditional Indian herbal (ayurvedic) medicine, i.e. Picrorrhiza kurroa (P. kurroa), Solanum xanthocarpum/trilobatum, Boswellia serrata (B. serrata), and Tylophora indica (T. indica);

traditional Japanese (Kampo) herbal medicine, i.e. Tsumura saiboku-to (TJ-96);

marihuana (smoking and in capsule form) and dried ivy leaf extract.

Participants included in the review
Asthma. To be included in the review, trials preferably defined asthmatic participants by ATS criteria; if this was not possible they were defined as those who had reversible airway constriction. Studies involving experimentally-induced asthma or people suffering from other medical conditions in addition to their asthma were excluded. Most of the studies included in the review involved 'bronchial' asthmatics. Some included steroid-dependent asthmatics, cold-type, heat-type, seasonal or severe asthmatics.

Outcomes assessed in the review
The outcome measures considered were lung function parameters, symptom diaries, medication usage and asthma events. The latter comprised unscheduled visits to doctors, antibiotics, prednisolone, or days missed from school or work. Immunological studies were not included. This review concentrated on lung function tests, forced expiratory volume in one second (FEV1) and airway resistance. Only a change in lung function of 15% or more was considered clinically relevant.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The validity of the studies was assessed using the scale of Jadad et al. (see Other Publications of Related Interest).
which addresses randomisation, blinding and the reporting of withdrawals. The authors do not state how many of the reviewers performed the validity assessment.

Data extraction

The authors state that all articles were read in full and that the data were extracted in a predefined fashion by the first author. Data were extracted on: study identification, sample size, definition of illness, duration of trial, treatment, control, primary outcome measures used, results and validity.

Methods of synthesis

How were the studies combined?

A narrative synthesis was undertaken under the headings 'Traditional Chinese herbal medicine', 'Traditional Indian herbal (Ayurvedic) medicine', 'Traditional Japanese herbal (Kampo) medicine', 'Marihuana', and 'Dried Ivy leaf extract'.

How were differences between studies investigated?

Differences between the participants in the studies were mentioned briefly in the narrative. Different interventions were presented separately. There was no formal investigation of heterogeneity.

Results of the review

Seventeen RCTs (n=1,445) were included.

The overall methodological quality of the trials was poor. Five trials included both children and adults, no trials presented a sample size calculation, one trial described the method of randomisation, and withdrawals were described in only 2 trials. Nine of the 17 trials were double-blind. Fourteen of the 17 trials scored 3 or less out of 5 on the Jadad scale.

Traditional Chinese herbal medicine (6 trials).

All scored 1 on the Jadad scale. Gingko biloba (1 trial, concentrated gingko leaf liquor 15 g thrice daily) gave a clinically relevant improvement at 8 weeks in FEV1, which was significantly greater than placebo (p<0.05). L. wallichii (1 trial, 10 mL thrice daily) gave a significantly improved FEV1 at one month compared with baseline (p<0.01), but this was not clinically relevant. The results compared with the control were not reported. The SBR method (1 trial) reported a significant but not clinically relevant increase in FEV1 compared with baseline over 2 weeks (p<0.01). The results compared with the control were not reported. The RKISP method in conjunction with steroid treatment (1 trial) gave a significant and clinically relevant increase in FEV1 over 4 to 6 months when compared with baseline, and a significant but not clinically relevant increase was seen in the control group (steroid treatment alone, p<0.05). No comparison between the treatment and control groups was reported. IKPA tablets (1 trial, 5 tablets thrice daily) were found to improve FEV1 significantly more than the control of beclomethasone dipropionate over 3 months (p<0.05). Improvements in both groups from baseline were significant and clinically relevant. The Wenyang Tonglulo mixture (1 trial, 30 mL twice daily) improved FEV1 significantly more than the control of oral salbutamol and inhaled beclomethasone over 8 weeks (p<0.05). Improvements in both groups from baseline were significant and clinically relevant.

Traditional Indian herbal medicine (8 trials).

P. kurroa (1 trial, P. kurroa root powder 300 mg thrice daily) showed no significant benefit over placebo. S. xanthocarpum and S. trifolatum were compared with salbutamol or deriphylline in one trial. A significant increase in FEV1 from baseline was found in both herb groups, although this was less than the increase in the control groups. B. serrata (1 trial, B. serrata gum resin) gave a significantly greater increase in FEV1 than placebo (p=0.0001). Only 3 of the 5 trials of T. indica reported between-group comparisons. One of these favoured T. indica over placebo for FEV1 improvement (p<0.01), symptom scores (p<0.05) and medication usage (p<0.01) at 4 weeks. The second showed no difference compared with placebo at 16 days for lung function, but a significant improvement in nocturnal dyspnoea (p<0.01). The third showed no significant differences compared with placebo at 3 weeks.
TJ-96 (1 trial).

Symptomatic improvement and patient perceptions were reported to be significantly better in the treatment group than the control group (p<0.01). The results of lung function tests were not reported.

Marihuana (1 trial).

No significant difference from placebo was found in the group which smoked a 2% tetrahydrocannabinol preparation for 2 hours. However, a significant decrease in airway resistance (10 to 13%, p<0.05), compared with placebo, was seen 1 to 4 hours after ingestion of a 2% tetrahydrocannabinol capsule.

Dried ivy leaf extract (1 trial, 35 mg).

In children, at 3 days, there was no significant improvement in FEV1 compared with placebo, but a significant decrease in airway resistance (23.6%, p=0.0361).

**Authors' conclusions**

No definitive evidence for any of the herbal preparations emerged. For some there are promising data which warrant further investigation. Considering the popularity of herbal medicine with asthma patients, there is an urgent need for stringently designed, clinically relevant RCTs for herbal preparations in the treatment of asthma.

**CRD commentary**

This was a well-conducted review. The research question was clear and appropriately applied via the study selection criteria. The search was good with no language restrictions, although it is possible that searches of AMED and of specialist Chinese, Indian and Japanese databases may have yielded more studies. An appropriate method was used to assess validity and the results of the assessment were presented and discussed. Adequate details of the included studies were presented and, given the clinical heterogeneity between the studies, a narrative synthesis seems to have been appropriate. Limitations of the studies included in the review are the lack of between-group comparisons and the lack of data on adverse effects, which the review authors also comment on.

The authors' conclusions follow from the results presented.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors state that considering the popularity of herbal medicine with asthma patients, there is an urgent need for stringently designed, clinically relevant RCTs for herbal preparations in the treatment of asthma.

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