Echinacea for upper respiratory infection
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Authors' objectives
To review the evidence regarding the effectiveness of orally ingested Echinacea extracts in reducing the incidence, severity or duration of acute upper respiratory infections (URIs).

Searching
MEDLINE (up to 1998) and other unnamed bibliographic reference services were searched using variants of the search term 'Echinacea'. More than 100 articles, books and book chapters were reviewed for content and further references. Herbal medicine experts in the USA and Germany were contacted for additional published and unpublished controlled trials. No language restrictions were reported. However, German language studies were reviewed for inclusion.

Study selection
Published or unpublished randomised placebo-controlled trials (RCTs) were included.

Specific interventions included in the review
Orally ingested Echinacea extracts taken from the herb or the root of the plant. The species of Echinacea included were E. purpurea, E. pallida and E. angustifolia.

Participants included in the review
Patients with acute URIs were included.

Outcomes assessed in the review
The outcomes eligible for inclusion in this review were not pre-specified.

The actual outcomes included were: URI symptoms and flu-like symptoms (including fever, chills, and muscle aches) in the treatment trials; and URI incidence in the prevention trials.

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 included trials were assessed on the basis of the following: randomisation; blinding; power; validity and clinical relevance of the outcome measurements; inclusion and exclusion criteria; indistinguishability of treatment and placebo; and appropriateness of the conclusions for the data presented. The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Data were extracted for the following categories: trial identification; plant species (product name); plant part used; purpose (treatment or prevention); the number of participants; outcome measure(s); and limitations of the included trials.
Methods of synthesis

How were the studies combined?
The trials were reviewed in a narrative synthesis.

How were differences between studies investigated?
The authors state that because of dissimilarities in the products, methods and outcome measurements, meta-analysis was not a viable option.

Results of the review

Thirteen RCTs with 2,416 participants were included in the review. Nine RCTs (n=1,264) evaluated treatment effectiveness while four RCTs (n=1,152) evaluated prevention.

In the treatment of acute URI, 8 of the 9 RCTs reported some evidence of a benefit of Echinacea. There was a moderate degree of methodological deficiency in all of the reviewed studies, and statistical significance was not reached for all outcomes. Nevertheless, the published evidence supports the ability of Echinacea to decrease the severity and duration of acute URI. The evidence for the ability of Echinacea to prevent rather than treat URI was not as promising. There were few published studies, and those found were of a moderate quality and reported trends rather than statistically-significant differences. Despite equivocal clinical effects, the safety data on Echinacea are relatively strong, at least when compared with many other herbal medicines. However, serious allergic or anaphylactic events have been reported, so some caution is needed.

Authors' conclusions

The evidence from published trials suggested that Echinacea may be beneficial for the early treatment of acute URIs. The influence of publication bias on those results is unknown. Echinacea preparations vary widely in composition, and are often found in combination with other potentially active constituents, making specific dose recommendations problematic. There was very little evidence supporting the prolonged use of Echinacea for the prevention of URIs.

CRD commentary

The authors stated their research question and some inclusion and exclusion criteria. The literature search appears to have been thorough, and has covered unpublished sources. While not stated specifically, it does not appear to have restricted the search to English language publications. The authors do not report who, or how many of the reviewers, performed the study selection, validity assessment and data extraction processes. The trials were assessed for validity using an unnamed method, which appears to have covered all of the pertinent issues.

Only very limited details of the included studies were presented in the review.

The review was a narrative discussion with no statistical pooling, due to the heterogeneity found in the included trials. Differences between the included studies were also discussed with regard to the participants, type of measurement and type of intervention. A more detailed synthesis would have been useful, with some grouping by species (type of product).

The authors' conclusions appear to follow from the results, but they should be viewed with caution because of the methodological limitations in the review process.

Implications of the review for practice and research

Practice: The authors state that the use of Echinacea for the early treatment of the common cold can be cautiously supported. More evidence is needed before clear recommendations can be made regarding specific formulations or dosing. If the decision is made to use an Echinacea product, the authors recommend that it be taken early in the course of a cold, several times per day, and discontinued as symptoms abate. The authors recommend that it is not to be taken routinely, chronically or on a preventive basis. Caution is recommended for infants, children, pregnant women, and persons suffering from serious autoimmune disorders.
Research: The authors state that higher quality trials are needed. These should include: larger, more representative populations; more precisely defined inclusion and exclusion criteria; more precisely defined objective and validated outcomes measurement; data to verify the inability of participants to distinguish placebo from drug; and better characterisation of the active constituents and mechanism of action.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.