Echinacea

Three species are used medicinally: *E. angustifolia*, *E. pallida*, *E. purpurea*

Also known as Black Sampson, Coneflower

Dr Joanne Barnes
Associate Professor in Herbal Medicines, School of Pharmacy, University of Auckland

PREPARATIONS: Dried root or rhizome of all three species may be prepared as an infusion or decoction and/or as an alcohol extract or tincture. The aerial parts of the *E. purpurea* may also be used as an expressed juice. Fresh or dried plant material is also formulated into solid dosage forms (e.g. tablets).

ACTIVE CONSTITUENTS: Several groups of constituents—the alkamides, caffeic acid derivatives, polysaccharides and alkenes—appear to contribute to activity. However, one study found that caffeic acid derivatives are not bioavailable following oral delivery and, therefore, cannot contribute to activity. The three species of echinacea are chemically dissimilar: *E. purpurea* and *E. angustifolia* contain alkamides, whereas *E. pallida* has only very low alkamide concentrations, if any. As with other herbal medicines, the profile of constituents in echinacea raw material and preparations will vary qualitatively and quantitatively depending on environmental factors, species, plant part used, methods of preparation and other factors.

MAIN USES: Long history of medicinal use for a variety of conditions, mainly infections. Current interest is focussed on its immunostimulant (increasingly described as immunomodulatory) effects, particularly in the treatment and prevention of the common cold, influenza and other upper respiratory tract infections (URTIs).

EVIDENCE FOR EFFICACY: Clinical trials have focussed on testing effects in preventing and treating the common cold and other URTIs.

Summary Message

Trials assessing echinacea for prevention and treatment of URTIs report conflicting results and at present there is insufficient evidence to recommend a particular preparation or dosage regimen. The limited data available indicate that echinacea preparations are generally well-tolerated, although allergic reactions may occur. As with other herbal medicines, echinacea products differ in their pharmaceutical quality, and the implications of this for efficacy and safety should be considered.

Results have been contradictory and the evidence is difficult to interpret as different studies have assessed different species and plant parts of echinacea, as well as different preparations and dosage regimens. A Cochrane systematic review found some evidence that preparations of the aerial parts of *E. purpurea* may be useful in early treatment of the common cold in adults, but that evidence for other echinacea preparations and for echinacea as prophylaxis against colds was not available from rigorous randomised controlled trials (RCTs). Several newer trials of different echinacea preparations for treatment of colds have also reported conflicting results.

ADVERSE EFFECTS: Animal studies of echinacea preparations generally show low toxicity; adverse effects/events reported in RCTs are infrequent, minor and similar to those noted for placebo. The main safety issues at present are the possibility of allergic reactions: echinacea species

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belong to the Asteraceae (Compositae, daisy) plant family, members of which are known to cause allergic reactions. Individuals with allergic tendencies, particularly those with known allergy to other members of the Asteraceae family (eg chamomile), should be advised to avoid echinacea preparations containing aerial parts. There is conflicting opinion regarding whether or not individuals with progressive systemic diseases such as leukaemia and multiple sclerosis and other autoimmune diseases should avoid echinacea. Although there is a lack of supporting evidence either way, in view of the seriousness of these conditions, it is appropriate to avoid use until further information is available. There is a lack of data on the safety of echinacea preparations taken during pregnancy and lactation and, given that the benefits of specific echinacea preparations have not been established definitively, excessive use during these periods should be avoided as a general precaution.

DRUG INTERACTIONS: There are no reported drug interactions for echinacea, although on the basis of its documented immunomodulatory activity, as a general precaution, echinacea should only be used with caution in patients taking immunosuppressant drugs. Studies assessing the effects of preparations of E. purpurea root on cytochrome P450 drug-metabolising enzymes in healthy volunteers have shown conflicting results. Caution is advised in using echinacea in patients taking drugs with a narrow therapeutic range and which are substrates for CYP1A2 and CYP3A4.

Key references

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Linde K, Barrett B, Wölkart K, Bauer R, Melchart D. Echinacea for preventing and treating the common cold (Review). Cochrane Database of Systematic Reviews 2006, Issue 1. Art. No: CD000530. DOI: 10.1002/14651858.CD000530.pub2.

Grommets effective for recurrent acute otitis media

Bruce Arroll MBChB, PhD, FRNZCGP, Professor of General Practice and Primary Health Care, University of Auckland, Private Bag 92019, Auckland; b.arroll@auckland.ac.nz

THE PROBLEM: Acute suppurative otitis media is one of the most common infectious diseases in childhood. Recurrent acute otitis media is defined for the purposes of this review as either three or more acute infections of the middle ear cleft in a six-month period, or at least four episodes in a year. Strategies for managing the condition include the assessment and modification of risk factors where possible, repeated courses of antibiotics for each new infection, antibiotic prophylaxis and the insertion of ventilation tubes (grommets).

CLINICAL BOTTOM LINE: Grommets have a significant role in maintaining a 'disease-free' state in the first six months after insertion, in children aged three years or younger. In one study, grommets reduced the number of episodes of acute otitis media by an average of 1.5 episodes per child (a reduction of approximately 70%), and significantly increased the proportion of children with no episodes of AOM. The other study reviewed also found a higher proportion of patients in the grommet group had no episodes of AOM in the six months after intervention, but the difference was not statistically significant. The effect size was small in terms of total number of episodes of recurrent AOM but in both studies more than 50% of children were AOM free, while only a handful were rendered AOM free in the antibiotic arm. This review involved only two small studies. Further research is required to investigate the effect of grommets beyond six months. Clinicians should take into account an individual patient's circumstances, the possible adverse effects of grommet insertion and the potential complications of AOM before surgery is undertaken.

Table 1. Grommets effective for recurrent acute otitis media

	Success	Evidence	Harms
Grommets to prevent recurrent otitis media	Reduction on Acute otitis media up to six months	Cochrane review[1]	Complications of surgery

References

1. McDonald S, Langton Hewer CD, Nunez DA. Grommets (ventilation tubes) for recurrent acute otitis media in children. Cochrane Database of Systematic Reviews 2008, Issue 4. Art. No.: CD004741. DOI: 10.1002/14651858.CD004741.pub2.

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