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FILE: ▪Echinacea (*Echinacea* spp.)
▪Upper Respiratory Tract Infections
▪Colds
▪Meta-analysis

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RE: Meta-analysis of Clinical Trials on Echinacea Suggests Prevention of Cold Symptoms

Schoop R, Klein P, Suter A, Johnston SL. *Echinacea* in the prevention of induced rhinovirus colds: a meta-analysis. *Clin Ther*. February 2006, 28(2):174-183.

Three species of the genus *Echinacea* are used to prevent and treat upper respiratory tract symptoms associated with common colds. Preparations may include the roots and/or aerial parts of *E. purpurea, E. angustifolia,* and *E. pallida*. There are many extraction and preparation methods. The efficacy of *Echinacea* preparations remains uncertain because there are clinical trials published with both positive and negative findings. Whereas evidence for efficacy in the treatment of cold episodes exists, conclusive proof for the preventative efficacy of echinacea preparations has been lacking so far. Efficacy of echinacea extracts as assessed in clinical trials basically seems to depend on the quality of the product (standardization, preparation) or the dosage utilized. The purpose of this meta-analysis was to determine whether the negative findings from prevention trials were a consequence of lack of efficacy (as has been reported in the media) or of inadequate sample size of the number of subjects in the single trials.

Researchers in Switzerland, Germany and the UK conducted a systematic search of electronic databases. Search terms included *Echinacea*, black Sampson, coneflower, and *Roter Sonnenhut* (English and German common names for echinacea various species of echinacea). The studies had to be inoculation studies rather than spontaneous common colds. That is, the trials had to be based on a design in which the patients were intentionally exposed to a rhinovirus (usually sprayed into the nose) as opposed to looking at a particular population and measuring the incidence of infection with colds via chance. The clinical trials identified were assessed for suitability using Quality of Reporting of Meta-analyses criteria. The primary outcome of the trials in this meta-analysis was the development of symptomatic clinical cold.

Three inoculation studies were identified that were of high quality, randomized, double-blind, and placebo-controlled. All 3 used similar inoculation protocols and standardized echinacea products for investigation so that the data from all 3 trials could be pooled, i.e., combined into one dataset for analysis. To summarize the 3 studies: prophylactic treatment started 7 or 14 days

before virus challenge and continued until day 5 or day 7. The studies used 300 mg of *E. purpurea* extract 3 times daily [Note: the original study does not describe the product used.], 300 mg of *E. angustifolia* root extract 3 times daily, *E. purpurea* above-ground plant parts 3 times daily (176mg EchinaGuard® [Echinacin®] Madaus GmbH), or a placebo. Additional information on the products was not described in the meta-analysis.

There were a total of 390 subjects in the 3 combined studies. Based on the meta-analysis the likelihood of experiencing a common cold was 55% higher with placebo than with echinacea. Overall echinacea preparations (as opposed to placebo) were effective in reducing the incidence of (i.e., preventing) symptoms of the common cold after clinical inoculation.

According to the authors this was the first meta-analysis to find prophylactic efficacy of standardized echinacea preparations. A clinical study would need to include 340 patients per group to detect the effect found in this meta-analysis with a statistical power of 80% and a significance level of 5%. The findings support the results of randomized, double-blind, placebo-controlled clinical trials that report the efficacy of echinacea preparations for the prevention of spontaneous colds. A limitation of this meta-analysis was the low number of eligible studies. Large clinical trials are needed to confirm the finding. According to the lead author of the present meta-analysis (R. Schoop, a scientist at Bioforce AG in Switzerland, the manufacturer of one of the echinacea products that was clinically tested and included in the meta-analysis), the results of this meta-analysis challenge the conclusions drawn from the latest rhinovirus challenge trial in the *New England Journal of Medicine*[1] and renews the discussion about the efficacy of echinacea preparations in preventing symptoms of the common cold (R. Schoop, personal communication [e-mail] to M. Blumenthal, Mar. 2, 2006).

—Heather S. Oliff, PhD

Reference

[1]Turner RB, Bauer R, Woelkart K, Hulsey TC, Gangemi JD. An evaluation of Echinacea angustifolia in experimental rhinovirus infections. *N Engl J Med* . 2005;353(4):341-348.

The American Botanical Council has chosen not to reprint the original article.