

JAMA Clinical Evidence Synopsis

Echinacea for Preventing and Treating the Common Cold

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CLINICAL QUESTION Are *Echinacea* products associated with a reduced incidence and a shorter duration of common colds compared with placebo?

BOTTOM LINE Individual prophylaxis trials show no association with prevention of the common cold, but exploratory meta-analysis suggests that *Echinacea* products may be associated with a small reduction in cold incidence. In treatment trials, there was no association of *Echinacea* products with a shorter duration of colds.

Preparations of the plant *Echinacea* are widely used in North America and Europe for prevention and treatment of the common cold.¹ This JAMA Clinical Evidence Synopsis summarizes the results of a Cochrane review² regarding the association of *Echinacea* products with prevention and treatment of colds.

Summary of Findings

Using the Cochrane “risk of bias” tool, 10 trials had a low risk of bias, 8 trials had a high risk of bias, and 6 trials had an unclear risk of bias. Because the trials studied chemically diverse extracts of *Echinacea*, we made an a priori decision not to pool data in a meta-analysis. Nevertheless, to provide a crude estimate of overall results and to generate hypotheses for future testing, we pooled study findings when there was no indication of statistical heterogeneity.

Ten trials investigated the prevention of colds. Nine of these (with 12 comparisons of an *Echinacea* product and placebo) reported the number of patients with at least 1 cold. None of the individual trials found a significant association of *Echinacea* with a reduction of colds (Figure). As findings were highly consistent ($I^2 = 0\%$, $\tau^2 = 0.00$), we pooled all 9 trials, regardless of the product used. Among these trials, an exploratory meta-analysis showed that prophylactic treatment with *Echinacea* products was

associated with a lower rate of colds, 285 of 666 patients in the *Echinacea* group vs 279 of 501 patients in the placebo group (risk ratio, 0.83 [95% CI, 0.75-0.92]; $P < .001$).

Fifteen trials were treatment trials. Six of these reported on duration of cold symptoms. One with a high risk of bias and 1 trial with unclear risk of bias reported large, statistically significant associations of *Echinacea* with shorter duration of cold symptoms compared with placebo, whereas the 4 trials with low risk of bias did not find any associations of *Echinacea* with duration of cold symptoms. Due to the strong heterogeneity of findings and methodological quality, we did not include exploratory meta-analyses across trials or products on efficacy.

Most common adverse effects reported were headache, nausea, and a bad taste. In treatment trials, *Echinacea* products were associated with a higher rate of adverse effects (323 of 946 patients receiving *Echinacea* vs 281 of 863 patients receiving placebo; odds ratio [OR], 1.28 [95% CI, 1.02-1.60]; $P = .03$). In prevention trials, there was no association of *Echinacea* with adverse effects (102 of 868 patients receiving *Echinacea* vs 65 of 757 patients receiving placebo; OR, 1.49 [95% CI, 0.95-2.35]; $P = .09$). The treatment trial among children found that *Echinacea* was associated with a higher prevalence of rashes.

Discussion

In individual trials, there was no association of *Echinacea* products with prevention of the common cold. However, exploratory meta-analysis across products suggests that *Echinacea* products may be associated with a small reduction in cold incidence and that individual trials seem to be underpowered. The overall evidence for clinically relevant treatment effects is weak. We updated the search in July 2014, but could not identify more recent randomized clinical trials on *Echinacea* for preventing or treating the common cold.

Limitations

A variety of products prepared from different *Echinacea* species, plant parts, and in different forms have been compared with placebo in randomized clinical trials. These preparations contain different amounts of bioactive components and hence are not biochemically similar. Preparations based on the aerial parts of *Echinacea purpurea* were investigated most often. Furthermore, trial approaches and methods for cold assessment were highly

Evidence Profile

No. of randomized clinical trials: 24 (33 comparisons of *Echinacea* and placebo; 14 treatment trials, 9 prevention trials, 1 trial examining both prevention and treatment); 1 trial included only children.

Study years: Conducted, 1990-2010; published, 1992-2012

No. of patients: 2809 in treatment trials, 1822 in prevention trials

Men: 1640 (42%) **Women:** 2294 (58%) (sex not reported in 5 trials)

Race/ethnicity: Unavailable

Age, mean: 27.9 years (age not reported in 5 trials)

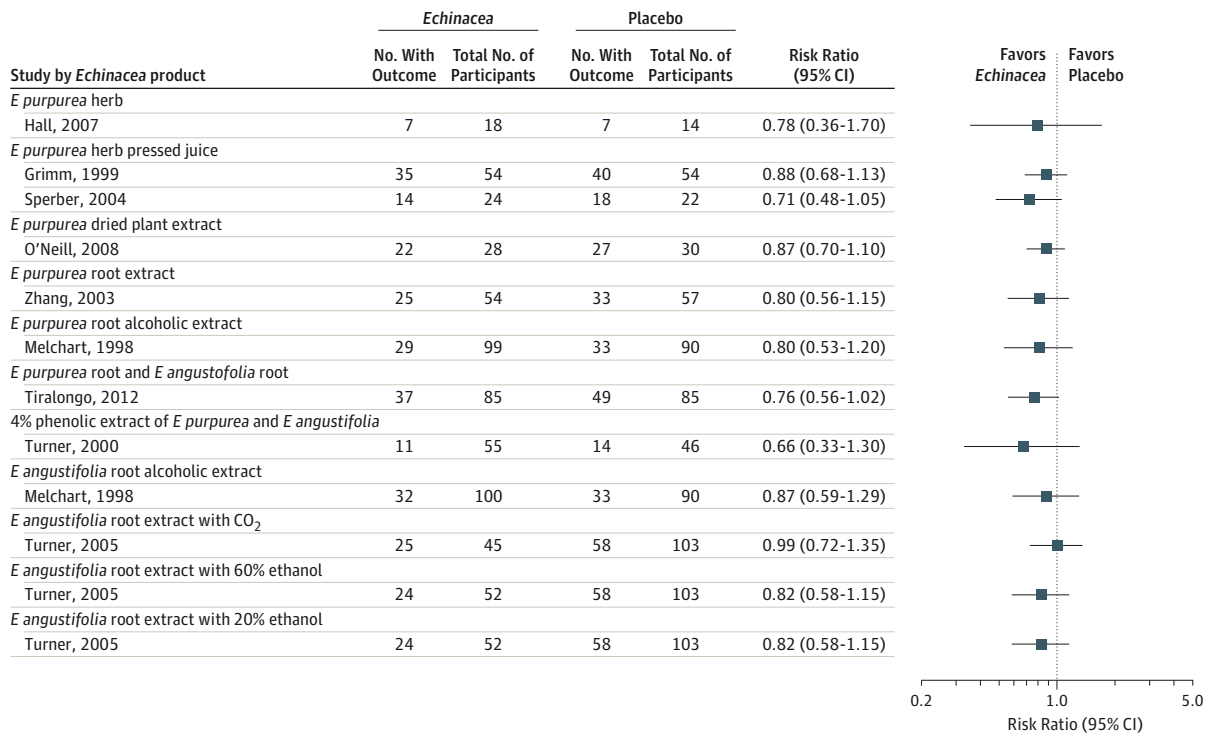
Settings: Variety of inpatient and outpatient settings

Countries: United States, Sweden, Germany, Canada, United Kingdom, Australia

Comparison: *Echinacea* vs placebo

Primary outcome: Cold duration in days for treatment trials; number of participants with at least 1 cold for prevention trials

Figure. Risk Ratios for Participants With at Least One Cold Episode In the Prevention Trials



Source: Data have been adapted with permission from Wiley.² The analysis includes 9 trials with 12 comparisons of an *Echinacea* product and placebo with

a total of 1167 patients. Melchart, 1998, compared 2 distinct *Echinacea* products and Turner, 2005, 3 distinct *Echinacea* products with a placebo group.

variable between studies. Therefore, trial results could not be combined for our primary outcome analyses. Publication bias cannot be ruled out with certainty.

mentary and alternative medicine in cold treatment, without mentioning *Echinacea* products particularly.

Comparison of Findings With Current Practice Guidelines

Areas in Need for Future Study

Treatment of the common cold with *Echinacea* products is not specifically addressed in current guidelines and recommendations.^{3,4} Recommendations by the British National Institute for Health and Care Excellence (NICE)⁵ generally advise against the use of comple-

Future studies should use well-defined preparations and a standard set of outcome measures in randomized clinical trials. Trials investigating the prevention of colds need large sample sizes as the potential effects of *Echinacea* products are likely to be small.

ARTICLE INFORMATION

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Submissions: We encourage authors to submit papers for consideration as a JAMA Clinical Evidence Synopsis. Please contact Dr McDermott at mdm608@northwestern.edu.

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Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Drs Linde and Karsch-Völk report being regular staff

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