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Echinacea *(Echinacea sp). Purple Coneflower (Echinacea purpurea, Echinacea angustifolia, E. pallida) root, whole plant, flowering tops*

Common Indications:

- Immune support – reduces intensity and duration of upper respiratory infections.
- Antibacterial and antiviral activity
- Anti-inflammatory properties by virtue of its immune modulating impact

General Comments:

There are dozen species of Echinacea, a flowering member of the daisy family. It is important to identify which species and which part of the plant is being used when engaged in supplementation. Just identifying echinacea does not hold the promise of medicinal effect. Historically, the use of this plant dates back before the American Indian and has had many applications, typically as an anti-inflammatory and immune supportive function.

Benefits & Mechanism of Action:

All echinacea species have chemical compounds called phenols, which are common to many other plants. Specifically Echinacea purpura contains the phenol compounds cichoric and caffeic acid. Caffeic acid has a mild antibiotic effect. *E. angustifolia* and *E. pallida* roots have higher levels of echinacoside, a different type of phenol. These phenols directly stimulates phagocytosis and NK cell activity, and an increased antibody-dependent cellular cytotoxicity mediated by tumor necrosis factor-alpha (TNF-a).

Echinacea angustifolia has a mild antibiotic effect. A review of several clinical studies, comprised thousands of patients, demonstrated that echinacea extracts decrease the frequency, symptoms, and severity of the common cold.[1,2] Two randomized controlled trials in 2012 found that *Echinacea purpurea* is effective at reducing the incidence of the common cold.[3,4] Some studies have failed to show benefit when using Echinacea in treating cold or flu drawing criticism that the quality of echinacea or its dose was inadequate. This is a common issue in review of plant based antimicrobial effect. Dose and quality are critical to success.

Dose:

- Acute – 500-1000mg of a standardized extract, 3 times a day for day 1, then 250- 500mg, 4 times a day.

- Prevention – 250mg daily of a standardized extract, 3 weeks on and 1 week off. Products should be standardized to contain 4% echinacosides or 4% sesquiterpene esters.

- Liquid succus (fresh plant juice) dosages range from 6-9mL daily in divided doses, for five to seven days TO 60 drops three times a day with food for 1 day, then 40 drops three times a day with food for up to 10 days, standardized to contain not less than 2.4 percent soluble beta-1,2 D-5 fructofuranosides; some products may also be standardized to isobutyl amide content.

*Note: There are various products with different dosages and standardizations to choose from. When choosing a dietary supplement, select those from reputable manufacturers.

Correct Usage:

Echinacea products should be taken for 3 weeks on, 1 week off for support of a healthy immune system and prevention.

Cautions & Side Effects:

- Echinacea has been reported to be safe in recommended doses, with a slight risk of self-limiting gastrointestinal symptoms and rashes.[6]

- Safety during pregnancy and breastfeeding has not been established.

- Echinacea should not be used if there is an allergy to any component of this dietary supplement. Do not use if you have a ragweed allergy or allergy to members of the daisy (chrysanthemum) family.

- Use with caution in those with hepatic disorders, including chronic alcoholics. Individuals with liver damage or at risk for liver disease should use Echinacea with caution. There has been 1 case report of acute hepatitis occurring in an individual taking echinacea, but a cause-and-effect relationship was not proven.[7]

- Echinacea has been reported to interact with the Cytochrome P-450 hepatic enzyme system and P-glycoprotein metabolism. Therefore, caution should be used when taking Echinacea and medications metabolized by CYP-450 and P-glycoprotein.

- A human study found that Echinacea increased levels of caffeine by decreasing the clearance and a human study found Echinacea decreased the levels of midazolam.[8]

- A clinical study reported that co-administration of *E. purpurea* with etravirine resulted in NO dosage adjustment requirements with the non-nucleoside reverse transcriptase inhibitor.[9]

- Use with caution in individuals with progressive systemic diseases such as autoimmune

diseases, tuberculosis, multiple sclerosis, AIDS and/or HIV infection.

References:

1. Linde K, Barrett B, Wolkart K, Bauer R, Melchart D. Echinacea for preventing and treating the common cold. Cochrane Database Syst Rev. 2009;(1):CD000530.

2. Shah SA, Sander S, White CM, Rinaldi M, Coleman CI. Evaluation of echinacea for the prevention and treatment of the common cold: a meta-analysis. Lancet Infect Dis. 2007 Jul;7(7):473-80. Review. Erratum in: Lancet Infect Dis. 2007 Sep;7(9):580.

3. Jawad M, et al. Safety and efficacy profile of Echinacea purpurea to prevent common cold episodes: a randomized, double-blind, placebo-controlled trial. Evid Based Complement Alternat Med. 2012:841315.

4. Tiralongo E, et al. Randomised, double blind, placebo controlled trial of Echinacea supplementation in air-travellers, eCAM, 2012;2012:417267.

5. Turner RB, Riker DK, Gangemi JD. Ineffectiveness of Echinacea for Prevention of Experimental Rhinovirus Colds. Antimicrob Agents Chemother. Jun2000;44(6):1708-9.

6. Huntley AL, et al. The safety of herbal medicinal products derived from Echinacea species: a systematic review. Drug Saf. 2005;28(5):387-400.

7. Kocaman O, Hulagu S, Senturk O. Echinacea-induced severe acute hepatitis with features of cholestatic autoimmune hepatitis. Eur J Intern Med. 2008 Mar;19(2):148. Epub 2007 Aug 9. No abstract available.

8. Gorski JC, Huang SM, Pinto A, et al. The effect of echinacea (Echinacea purpurea root) on cytochrome P450 activity in vivo. Clin Pharmacol Ther. 2004 Jan;75(1):89-100.

9. Molto J, Valle M, Miranda C, et al. Herb-drug interaction between Echinacea purpurea and etravirine in HIV-infected patients. Antimicrob Agents Chemother. 2012;56(10):5328-31.

10. Abrahams SG. Echinacea for the common cold. Ann Intern Med 2003;139(7):599.

11. Agnew LL, Guffogg SP, Matthias A, et al. Echinacea intake induces an immune response through altered expression of leucocyte hsp70, increased white cell counts and improved erythrocyte antioxidant defences. J Clin Pharm Ther 2005;30(4):363-369.

12. Applequist WL. Echinacea for the common cold. Ann Intern Med 2003;139(7):599-600.

13. Bany J, Siwicki AK, Zdanowska D, et al. Echinacea purpurea stimulates cellular immunity and anti- bacterial defence independently of the strain of mice. Pol J Vet Sci 2003;6(3 Suppl):3-5.

14. Barnes J, Anderson LA, Gibbons S, Phillipson JD. Echinacea species (Echinacea angustifolia (DC.) Hell., Echinacea pallida (Nutt.) Nutt.,Echinacea purpurea (L.) Moench): a review of

their chemistry, pharmacology and clinical properties. J Pharm Pharmacol. 2005;57(8):929-54.

15. Barrett B, Vohmann M, Calabrese C. Echinacea for upper respiratory tract infection. J Fam Pract 1999;48(8):628-635.

16. Brinkeborn R, Shah D, Geissbuhler S, et al. Echinaforce in the treatment of acute colds. Results of a placebo-controlled double-blind study carried out in Sweden. Schweiz Zschr Ganzheits Medizin 1998;10:26-29.

17. Chen Y, Fu T, Tao T, et al. Macrophage activating effects of new alkamides from the roots of Echinacea species. J Nat Prod 2005;68(5):773-776.

18. Chicca A, Adinolfi B, Martinotti E, Fogli S, Breschi MC, Pellati F, Benvenuti S, Nieri P. Cytotoxic effects of Echinacea root hexanic extracts on human cancer cell lines. J Ethnopharmacol. 2006; [Epub ahead of print].

19. Dorn M, Knick E, Lewith G. Placebo-controlled, double-blind study of Echinaceae pallidae radix in upper respiratory tract infections. Complement Ther Med 1997;5:40-42. Firenzuoli F, Gori L. Echinacea for treating colds in children. JAMA 2004;291(11):1323-1324.

20. Giles JT, Palat CT, III, Chien SH, et al. Evaluation of echinacea for treatment of the common cold. Pharmacotherapy 2000;20(6):690-697.

21. Goel V, Lovlin R, Chang C, et al. A proprietary extract from the echinacea plant (Echinacea purpurea) enhances systemic immune response during a common cold. Phytother Res 2005;19(8):689-694.

22. Grimm W, Muller HH. A randomized controlled trial of the effect of fluid extract of Echinacea purpurea on the incidence and severity of colds and respiratory infections. Am J Med 1999;106(2):138-143.

23. Hoheisel O, Sandberg M, Bertram S, et al. Echinacea treatment shortens the course of the common cold: a double blind, placebo-controlled clinical trial. European J Clin Research 1997;9:261-269.

24. Kim L, Wollner D, Anderson P, et al. Echinacea for treating colds in children. JAMA 2004;291(11):1323. Leach M. Echinacea angustifolia in rhinovirus infections. N Engl J Med. 2005;353(18):1971-2; author reply 1971-2.

25. Lindenmuth GF, Lindenmuth EB. The efficacy of echinacea compound herbal tea preparation on the severity and duration of upper respiratory and flu symptoms: a randomized, double-blind placebo- controlled study. J Altern Complement Med 2000;6(4):327-334.

26. Melchart D, Linde K, Fischer P, et al. Echinacea for preventing and treating the common cold. Cochrane Database Syst Rev 2000;(2):CD000530.

27. Millea PJ. Echinacea for the common cold. Ann Intern Med 2003;139(7):601. Mittman P, Wollner D, Kim L. Echinacea for the common cold. Ann Intern Med 2003;139(7):600-601.

28. Perri D, Dugoua JJ, Mills E, Koren G. Safety and efficacy of echinacea (Echinacea angustafolia, e. purpurea and e. pallida) during pregnancy and lactation. Can J Clin Pharmacol. 2006;13(3):e262-7.

29. Schoop R, Buechi S, Suter A. Open, multicenter study to evaluate the tolerability and efficacy of echinaforce forte tablets in athletes. Adv Ther. 2006;23(5):823-33.

30. Schoop R, Klein P, Suter A, Johnston SL. Echinacea in the prevention of induced rhinovirus colds: a meta- analysis. Clin Ther. 2006;28(2):174-83.

31. Still DW, Kim DH, Aoyama N. Genetic variation in Echinacea angustifolia along a climatic gradient. Ann Bot (Lond) 2005;96(3):467-477.

32. Taylor JA, Weber W, Standish L, et al. Efficacy and safety of echinacea in treating upper respiratory tract infections in children: a randomized controlled trial. JAMA 2003;290(21):2824-2830.

33. Tubaro A, Tragni E, Del Negro P, et al. Anti-inflammatory activity of a polysaccharidic fraction of Echinacea angustifolia. J Pharm Pharmacol 1987;39(7):567-569.

34. Viehmann P. [Results of treatment with an Echinacea-based ointment]. Erfahrungsheilkunde 1978;27(6):353-358.

35. Yale SH, Liu K. Echinacea purpurea therapy for the treatment of the common cold: a randomized, double- blind, placebo-controlled clinical trial. Arch Intern Med. 2004;164(11):1237-41.