

London, 6 March 2008  
Doc. Ref: EMEA/HMPC/111536/2007

**This document was valid from 6 March 2008 until November 2014.  
It is now superseded by a new version adopted by the HMPC on  
24 November 2014 and published on the EMA website.**

**LIST OF REFERENCES SUPPORTING THE ASSESSMENT REPORT ON:**

**Echinaceae purpureae herba  
*Echinacea purpurea* (L.) Moench  
(purple coneflower herb)**

*The EMEA acknowledges that copies of the underlying works used to produce this monograph were provided for research only with exclusion of any commercial purpose.*

Articles marked by asterisk (\*) were available to the rapporteur only in the form of abstract.

Baetgen D. (1984) Erfolge in der Keuchhusten – Behandlung mit Echinacin. Therapiewoche 34: 5115-5119.

Baetgen D. (1988) Behandlung der akuten Bronchitis im Kindesalter – Praxisstudie mit einem Immunstimulans aus *Echinacea purpurea*. Pädiatrie 1: 66-70.

Barnes J, Anderson LA, Gibbons S, Phillipson JD. (2005) *Echinacea* species (*Echinacea angustifolia* (DC.) Hell., *Echinacea pallida* (Nutt.), *Echinacea purpurea* (L.) Moench): a review of their chemistry, pharmacology and clinical properties. *J Pharm Pharmacol.* 57(8):929-954. \*

Barrett B. (2003) Medicinal properties of *Echinacea*: a critical review. *Phytomedicine* 10(1): 66-86.

Barrett B. (2004) Efficacy and safety of *Echinacea* in treating upper respiratory tract infections in children: a randomized controlled trial. *J Pediatr.* 145(1): 135-136.

Barrett B, Brown RL, Locken K, Maberry R, Bobula JA, D'Alessio D. (2002) Treatment of the common cold with unrefined *Echinacea*. A randomized, double-blind, placebo-controlled trial. *Ann Intern Med.* 137(12): 939-946.

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

Bauer R. (2002) New knowledge regarding the effect and effectiveness of *Echinacea purpurea* extracts. *Wien Med Wochenschr* 152(15-16): 407-411.

Bauer R., Foster S. (1991). Analysis of alkamides and caffeic acid derivatives from *Echinacea simulata* and *E. paradoxa* roots. *Planta Med.* 57: 447–449.

Bauer R, Jurcic K, Puhlmann J, Wagner H. (1988a) Immunologic in vivo and in vitro studies on *Echinacea* extracts. *Arzneimittelforschung* 38: 276-281.

Bauer R, Khan IA, Wagner H. (1988c) TLC and HPLC Analysis of *Echinacea pallida* and *E. angustifolia* roots. *Planta Medica* 1988; 54:426-430.

Bauer R, Remiger P, Jurcic K, Wagner H. (1989) Beeinflussung der Phagozytose-Aktivität durch *Echinacea*-Extrakte. *Zeitschrift für Phytotherapie* 10: 43-48. Bauer R, Remiger P, Wagner H (1988b).

*Echinacea*. Comparative TLC and HPLC analysis of herbal drugs from *Echinacea purpurea*, *E. pallida* and *E. angustifolia*. Part 3. Dtsch. Apoth. Ztg. 128: 174-180.

Binns SE, Purgina B, Bergeron C, Smith ML, Ball L, Baum BR, Arnason JT. (2000) Light-mediated antifungal activity of *Echinacea* extracts. Planta Medica 66(3): 241-244.

Blumenthal M. (2004) *Echinacea* trial. Altern Ther Health Med. 10(2): 12-14.

Bourne LC; Rice-Evans C (1998) Bioavailability of ferulic acid. Biochemical and biophysical research communications 253: 222-227.

Brinkeborn RM, Shah DV, Degenring FH. (1999) Echinaforce and other *Echinacea* fresh plant preparations in the treatment of the common cold. A randomized, placebo-controlled, double-blind clinical trial. Phytomedicine 6(1): 1-6.

Burger RA, Torres AR, Warren RP, Caldwell VD, Hughes BG. (1997) *Echinacea*-induced cytokine production by human macrophages. Int J Immunopharmacol. 19(7): 371-379.

Cheminat A, Zawatzky R, Becker H, Bruillard R (1988) Caffeoyl conjugates from *Echinacea* species: structures and biological activity Phytochemistry 27: 2787-2794.

Chow G, Johns T, Miller SC. (2006) Dietary *Echinacea purpurea* during murine pregnancy: effect on maternal hemopoiesis and fetal growth. Biol Neonate. 89(2): 133-138.

Clifford LJ, Nair MG, Rana J, Dewitt DL. (2002) Bioactivity of alkamides isolated from *Echinacea purpurea* (L.) Moench. Phytomedicine 9(3): 249-253.

Currier NL, Miller SC. (2000) Natural killer cells from aging mice treated with extracts from *Echinacea purpurea* are quantitatively and functionally rejuvenated. Exp Gerontol. 35(5): 627-639.

Dietz B, Heilmann J, Bauer R. (2001) Absorption of dodeca-2E,4E,8Z,10E/Z-tetraenoic acid isobutylamides after oral application of *Echinacea purpurea* tincture. Planta Medica 67: 863-864.

Dorsch W. (1996) Klinische Anwendung von Extrakten aus *Echinacea purpurea* oder *Echinacea pallida*. Zeitschrift für ärztliche Fortbildung 90: 117-122.

Dorsch W, Loew D, Meyer-Buchtela E, Schilcher H. (2002) Kinderdosierungen von Phytopharmaka. Kooperation Phytopharmaka BonnESCOP (2003) European Scientific Cooperative on Phytotherapy monographs on the medicinal uses of plant drugs, Fascicule 6, *Echinaceae purpureae* herba (purple coneflower herb).

Firenzuoli F, Gori L. (2004) *Echinacea* for treating colds in children. JAMA 291(11): 1323-1324.

Foster S. (1996) The Purple Coneflowers. American Botanical Council, <http://www.herbalgram.org/>

Gallo M, Sarkar M, Au W, Pietrzak K, Comas B, Smith M, Jaeger TV, Einarsen A, Koren G. (2000) Pregnancy outcome following gestational exposure to *Echinacea*: a prospective controlled study. Arch Intern Med. 160(20): 3141-3143.

Gan XH, Zhang L, Heber D, Bonavida B. (2003) Mechanism of activation of human peripheral blood NK cells at the single cell level by *Echinacea* water soluble extracts: recruitment of lymphocyte-target conjugates and killer cells and activation of programming for lysis. Int Immunopharmacol. 3(6): 811-824.

Gertsch J, Schoop R, Kuenzle U, Suter A. (2004) *Echinacea* alkylamides modulate TNF-a gene expression via cannabinoid receptor CB2 and multiple signal transduction pathways. FEBS Letters 577(3): 563-569.

Giancaspro G. (2004): *Echinacea purpurea* Aerial Parts. Pharmacopeial Forum 30: 557-560.

Giles JT, Palat CT 3rd, Chien SH, Chang ZG, Kennedy DT. (2000) Evaluation of *Echinacea* for treatment of the common cold. Pharmacotherapy 20(6): 690-697.

Gilroy CM, Steiner JF, Byers T, Shapiro H, Georgian W. (2003) *Echinacea* and truth in labeling. Arch Intern Med. 163(6): 699-704. \*

- Goel V, Chang C, Slama JV, Barton R, Bauer R, Gahler R, Basu TK. (2002) Alkylamides of *Echinacea purpurea* stimulate alveolar macrophage function in normal rats. *Int Immunopharmacol.* 2(2-3): 381-387.
- Goel V, Lovlin R, Barton R, Lyon MR, Bauer R, Lee TD, Basu TK. (2004) Efficacy of a standardized *Echinacea* preparation (Echinilin) for the treatment of the common cold: a randomized, double-blind, placebo-controlled trial. *J Clin Pharm Ther.* 29(1): 75-83.
- Goel V, Lovlin R, Chang C, Slama JV, Barton R, Gahler R, Bauer R, Goonewardene L, Basu TK. (2005) A proprietary extract from the *Echinacea* plant (*Echinacea purpurea*) enhances systemic immune response during a common cold. *Phytother Res.* 19(8): 689-694.
- Götte K, Roschke I. (2001) A supportive measure in the treatment of acute infections of the respiratory tract in children with recurring infections of the upper respiratory tract. *PÄD Praktische Pädiatrie* 7, 95-98 (2001)).
- Gotti R, Pomponio R, Bertucci C, Cavrini V. (2002) Simultaneous analysis of the lipophilic and hydrophilic markers of *Echinacea* plant extracts by capillary electrophoresis. *Journal of Separation Science* 25, 15-17, 1079-1086.
- Gorski JC, Huang SM, Pinto A, Hamman MA, Hilligoss JK, Zaheer NA, Desai M, Miller M, Hall SD. (2004) The effect of *Echinacea* (*Echinacea purpurea* root) on cytochrome P450 activity in vivo. *Clin Pharmacol Ther.* 75: 89-100.
- Grimm W, Müller HH. (1999) 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.* 106(2):138-143.
- Gurley BJ, Gardner SF, Hubbard MA, Williams DK, Gentry WB, Carrier J, Khan IA, Edwards DJ, Shah A. (2004) In vivo assessment of botanical supplementation on human cytochrome P450 phenotypes: *Citrus aurantium*, *Echinacea purpurea*, milk thistle, and saw palmetto. *Clin Pharmacol Ther.* 76(5): 428-440. \*
- HagerROM 2004: Hagers Handbuch der Drogen und Arzneistoffe, CD-ROM Version 5.1.
- Heinen-Kammerer T, Holtmannspotter C, Schnabel S, Motzkat K, Kiencke P, Rychlik R. (2005) Effectiveness of echinacin in therapy of chronic recurrent respiratory disease *Gesundheitswesen* 67(4): 296-301. \*
- Hoheisel O, Sandberg M, Bertram S, Bulitta M, Schafer M. (1997) Echinagard treatment shortens the course of the common cold: a double-blind, placebo-controlled clinical trial. *European Journal of Clinical Research* 9: 261-268.
- Hostettmann K. (2003) History of a plant: the example of *Echinacea*. *Forsch Komplementarmed Klass Naturheilkd.* 10(Suppl 1): 9-12. \*
- Huntley A, Coon JT, Ernst E. (2005) The safety of herbal medicinal products derived from *Echinacea* species. *Drug Safety* 28(5): 387-400. \*
- Izzo AA, Ernst E. (2001) Interactions between herbal medicines and prescribed drugs: a systematic review. *Drugs* 61(15): 2163-2175.
- Jager H, Meinel L, Dietz B, Lapke C, Bauer R, Merkle HP, Heilmann J. (2000) Transport of Alkamides from *Echinacea* Species through Caco-2 Monolayers1. *Planta Medica* 68: 469-471.
- Kemp DE, Franco KN. (2002) Possible leukopenia associated with long-term use of *Echinacea*. *J Am Board Fam Pract.* 15(5): 417-419.
- Kim L, Wollner D, Anderson P, Brammer D. (2004) *Echinacea* for treating colds in children. *JAMA* 291(11): 1323.
- Kinkel HJ, Plate M, Tullner HU. (1984) Effect of Echinacin ointment in healing of skin lesions. *Medizinische Klinik* 79; 580-583.
- Kommission E (1989) Aufbereitungsmonographie *Echinacea purpurea*. *Bundesanzeiger vom 2.3.1989.*

Koenig K, Roehr CC. (2006) Does treatment with *Echinacea purpurea* effectively shorten the course of upper respiratory tract infections in children? Arch Dis Child. 91(6): 535-537.

Kreft S. (2005) Cichoric acid content and biomass production of *Echinacea purpurea* plants cultivated in Slovenia. Pharmaceutical Biology 43(8): 662-665.

Le Tourneau M. (2004) *Echinacea* fails to show efficacy in treating colds in a pediatric population. Altern Ther Health Med. 10(1): 16.

Lee AN, Werth VP. (2004) Activation of autoimmunity following use of immunostimulatory herbal supplements. Arch Dermatol. 140(6): 723-727.

Lenk W. (1989) Acute toxicity of various polysaccharides from *Echinacea purpurea* in the mouse. Zeitschrift für Phytotherapie 10: 49-51.

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

Lindenmuth GF, Lindenmuth EB. (2000) 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. 6(4): 327-334.

Logan JL, Ahmed J. (2003) Critical hypokalemic renal tubular acidosis due to Sjogren's syndrome: association with the purported immune stimulant *Echinacea*. Clin Rheumatol. 22(2): 158-159.

Luettig B, Steinmuller C, Gifford GE, Wagner H, Lohmann-Matthes ML. (1989) Macrophage activation by the polysaccharide arabinogalactan isolated from plant cell cultures of *Echinacea purpurea*. J Natl Cancer Inst. 81(9): 669-675.

Maffei Facino R. (1995) Echinacoside and caffeoyl conjugates protect collagen from free radical-induced degradation: a potential use of *Echinacea* extracts in the prevention of skin photocamage. Planta Medica 61: 510-514.

Manček B, Kreft S. (2005) Determination of cichoric acid content in dried press juice of purple coneflower (*Echinacea purpurea*) with capillary electrophoresis. Talanta 66(5): 1094-1097.

Matthias A, Blanchfield JT, Penman KG, Toth I, Lang CS, De Voss JJ, Lehmann RP. (2004) Permeability studies of alkylamides and caffeic acid conjugates from *Echinacea* using a Caco-2 cell monolayer model. J Clin Pharm Ther. 29(1): 7-13.

Matthias A, Addison RS, Penman KG, Dickinson RG, Bone KM, Lehmann RP. (2005a) *Echinacea* alkamide disposition and pharmacokinetics in humans after tablet ingestion. Life Sci. 77(16): 2018-2029.

Matthias A, Gillam EM, Penman KG, Matovic NJ, Bone KM, De Voss JJ, Lehmann RP. (2005b) Cytochrome P450 enzyme-mediated degradation of *Echinacea* alkylamides in human liver microsomes. Chem Biol Interact. 155(1-2): 62-70.

Melchart D, Linde K, Worku F, Bauer R, Wagner H. (1994) Immunomodulation with *Echinacea* – a systematic review of controlled clinical trials Phytomedicine 1: 245-254.

Melchart D, Clemm C, Weber B, Draczynski T, Worku F, Linde K, Weidenhammer W, Wagner H, Saller R. (2002) Polysaccharides isolated from *Echinacea purpurea* herba cell cultures to counteract undesired effects of chemotherapy - a pilot study. Phytother Res.; 16(2):138-142.

Mengs U, Clare CB, Poiley JA. (1991) Toxicity of *Echinacea purpurea* - Acute, subacute and genotoxicity studies. Arzneimittelforschung 41: 1076-1088.

Merali S, Binns S, Paulin-Levasseur M, Ficker C, Smith M, Baum B, Brovelli E, Arnason JT. (2003) Antifungal and Anti-inflammatory Activity of the Genus *Echinacea*. Pharmaceutical Biology (formerly International Journal of Pharmacognosy) 41: 412-420.

Mishima S, Saito K, Maruyama H, Inoue M, Yamashita T, Ishida T, Gu Y. (2004) Antioxidant and immuno-enhancing effects of *Echinacea purpurea*. Biol Pharm Bull. 27(7): 1004-1009.

Mullins RJ. (1998) *Echinacea*-associated anaphylaxis. Med J Aust. 168(4): 170-171. \*

- Mullins RJ, Heddle R. (2002) Adverse reactions associated with *Echinacea*: the Australian experience. Ann Allergy Asthma Immunol. 88(1): 42-51.
- Nordeng H, Havnen GC. (2004) Use of herbal drugs in pregnancy: a survey among 400 Norwegian women. Pharmacopoeia Drug Saf. 13(6): 371-380.
- Ondrizek RR, Chan PJ, Patton WC, King A. (1999) Inhibition of human sperm motility by specific herbs used in alternative medicine. J Assist Reprod Genet. 16(2): 87-91.
- Orinda D, Diederich J, Wacker A. (1973) Antiviral activity of compounds of *Echinacea purpurea*. Arzneimittelforschung (Drug Research) 23: 1119-1120.
- Parnham MJ. (1996) Benefit-risk assessment of the squeezed sap of the purple coneflower (*Echinacea purpurea*) for long term oral immunostimulation. Phytomedicine 3: 95-102.
- Pasco D, Pugh ND, Khan I, Moraes R. (2005) Immunostimulatory agents in botanicals, US patent #20050002962.
- Pellati F, Benvenuti S, Magro L, Melegari M, Soragni F. (2004) Analysis of phenolic compounds and radical scavenging activity of *Echinacea* spp. J Pharm Biomed Anal. 35(2): 289-301.
- Perri D, Dugoua JJ, Mills E, Koren G. (2006) Safety and efficacy of *Echinacea* (*Echinacea angustifolia*, *E. purpurea* and *E. pallida*) during pregnancy and lactation. Can J Clin Pharmacol. 13(3): e262-267.
- Pietta P, Mauri P, Bauer R. (1998). MEKC Analysis of different *Echinacea* species. Planta Medica 64: 649-652.
- Proksch A, Wagner H. (1987) Structural analysis of a 4-O-methylglucuronoxylan with immunostimulating activity from *Echinacea purpurea*. Phytochemistry 26: 1989-1993.
- Pugh ND, Balachandran P, Lata H, Dayan FE, Joshi V, Bedir E, Makino T, Moraes R, Khan I, Pasco DS. (2005) Melanin: dietary mucosal immune modulator from *Echinacea* and other botanical supplements. Int Immunopharmacol. 5(4): 637-647.
- Randolph RK, Gellenbeck K, Stonebrook K, Brovelli E, Qian Y, Bankaitis-Davis D, Cheronis J. (2003) Regulation of human immune gene expression as influenced by a commercial blended *Echinacea* product: preliminary studies. Exp. Biol. Med. 228: 1051-1056.
- Raner GM, Cornelious S, Moulick K, Wang Y, Mortenson A, Cech NB. (2007) Effects of herbal products and their constituents on human cytochrome P450(2E1) activity. Food Chem Toxicol. 45(12): 2359-2365. Epub 2007 Jun 15.
- Reisch J, Spitzner W, Schulte KE. (1967) The problem of the microbiological activity of simple acetylene compounds. Arzneimittelforschung 17: 816-825.
- Rininger JA, Kickner S, Chigurupati P, McLean A, Franck Z. (2000) Immunopharmacological activity of *Echinacea* preparations following simulated digestion on murine macrophages and human peripheral blood mononuclear cells. J Leukoc Biol. 68(4): 503-510.
- Roesler J, Steinmuller C, Kiderlen A, Emmendorffer A, Wagner H, Lohmann-Matthes ML. (1991) Application of purified polysaccharides from cell cultures of the plant *Echinacea purpurea* to mice mediates protection against systemic infections with *Listeria monocytogenes* and *Candida albicans*. Int J Immunopharmacol. 13(1): 27-37.
- Schimmer O, Abel G, Behninger C. (1989) Investigations on the genotoxic potency of a neutral polysaccharide from *Echinacea* cell cultures in cultured human lymphocytes. Zeitschrift für Phytotherapie 10: 39-42.
- Schulte KE, Rücker G, Boehme R. (1967a) Polyacetilenes as compounds of the roots of burs. Arzneimittelforschung 17: 829-833.
- Schulte KE, Rücker G, Perlick J. (1967b) The presence of polyacetylene compounds in *Echinacea purpurea* and *Echinacea angustifolia*. Arzneimittelforschung 17: 825-829.

Schulzen B, Bulitta M, Ballering-Bruhl B, Koster U, Schafer M. (2001). "Efficacy of *Echinacea purpurea* in patients with a common cold. A placebo-controlled, randomised, double-blind clinical trial." *Arzneimittelforschung* 51(7): 563-568.

Schwarz E, Metzler J, Diedrich JP, Freudenstein J, Bode C, Bode JC. (2002) Oral administration of freshly expressed juice of *Echinacea purpurea* herbs fail to stimulate the nonspecific immune response in healthy young men: results of a double-blind, placebo-controlled crossover study. *J Immunother.* 25(5): 413-420.

Shah SA, Sander S, White CM, Rinaldi M, Coleman CI. (2007) Evaluation of *Echinacea* for the prevention and treatment of the common cold: a meta-analysis. *Lancet Infect Dis.* 7(7): 473-480. Erratum in: *Lancet Infect Dis.* 7(9): 580.

Skwarek T, Tynecka Z, Glowniak K, Lutostanska E. (1996) *Echinacea* – inducer of interferons. *Herba Polonica* 42: 110-117.

Soon SL, Crawford RI. (2001) Recurrent erythema nodosum associated with *Echinacea* herbal therapy. *J Am Acad Dermatol.* 44(2): 298-299. \*

Sperber SJ, Shah LP, Gilbert RD, Ritchey TW, Monto AS. (2004) *Echinacea purpurea* for prevention of experimental rhinovirus colds. *Clin Infect Dis.* 38(10): 1367-1371.

Steinmuller C, Roesler J, Grottrup E, Franke G, Wagner H, Lohmann-Matthes ML. (1993) Polysaccharides isolated from plant cell cultures of *Echinacea purpurea* enhance the resistance of immunosuppressed mice against systemic infections with *Candida albicans* and *Listeria monocytogenes*. *Int J Immunopharmacol.* 15(5): 605-614.

Stimpel M, Proksch A, Wagner H, Lohmann-Matthes ML. (1984) Macrophage activation and induction of macrophage cytotoxicity by purified polysaccharide fractions from the plant *Echinacea purpurea*. *Infect Immun.* 46(3): 845-849.

Stotzem CD, Hungerland U, Mengs U. (1992) Influence of *Echinacea purpurea* on the phagocytosis of human granulocytes. *Medical Science Research* 20: 719-720.

Taylor JA, Weber W, Calabrese C. (2004) *Echinacea* for treating colds in children. *JAMA* 291(11): 1324.

Taylor JA, Weber W, Standish L, Quinn H, Goesling J, McGann M, Calabrese C. (2003) Efficacy and safety of *Echinacea* in treating upper respiratory tract infections in children: a randomized controlled trial. *JAMA* 290(21): 2824-2830.

Tünnerhoff FK, Schwabe HK. (1956) Studies in human beings and animals on the influence of *Echinacea* extracts on the formation of connective tissue following the implantation of fibrin. *Arzneimittelforschung* 6: 330-334.

Turner RB, Riker DK, Gangemi JD. (2000) Ineffectiveness of *Echinacea* for prevention of experimental rhinovirus colds. *Antimicrob Agents Chemother.* 44(6): 1708-1709.

Uang YS; Hsu KY. (1997) A dose-dependent pharmacokinetic study on caffeic acid in rabbits after intravenous administration. *Biopharmaceutics and drug disposition* 18: 727-736.

Vonau B, Chard S, Mandalia S, Wilkinson D, Barton SE. (2001) Does the extract of the plant *Echinacea purpurea* influence the clinical course of recurrent genital herpes? *Int J STD AIDS* 12(3): 154-158. \*

Wacker A, Hilbig W. (1978) Virus-inhibition by *Echinacea purpurea*. *Planta Medica* 33: 89-102.

Wagner H, Proksch A, Riess-Maurer I, Vollmar A, Odenthal S, Stuppner H, Jurcic K, Le Turdu M, Fang JN. (1985) Immunostimulating action of polysaccharides (heteroglycans) from higher plants. *Arzneimittelforschung* 35(7): 1069-1075.

Wagner H, Stuppner H, Schafer W, Zenk MA. (1988). Immunologically active polysaccharides of *Echinacea purpurea* cell cultures. *Phytochemistry* 27: 119-126.

Washam C. (2004) *Echinacea* no cure-all for kids. *Environ Health Perspect.* 112(8): A466.

Weber W, Taylor JA, Stoep AV, Weiss NS, Standish LJ, Calabrese C. (2005) *Echinacea purpurea* for prevention of upper respiratory tract infections in children. J Altern Complement Med. 11(6): 1021-1026.

Westendorf J, Czok G. (1978) Pharmacokinetic of <sup>14</sup>C labelled derivatives of cinnamic acid on rats. Zeitschrift für Ernährungswissenschaft 17: 26-36

WHO (1999): WHO monographs on selected medicinal plants, Vol. 1, WHO Geneva 1999, 136-144.

Woelkart K, Koidl C, Grisold A, Gangemi JD, Turner RB, Marth E, Bauer R. (2005) Bioavailability and pharmacokinetics of alkamides from the roots of *Echinacea angustifolia* in humans. J Clin Pharmacol. 45(6):683-689. \*

Yale SH, Liu K. (2004) *Echinacea purpurea* therapy for the treatment of the common cold: a randomized, double-blind, placebo-controlled clinical trial. Arch Intern Med. 2004 164(11): 1237-1241.

Yale SH, Glurich I. (2006) Analysis of the inhibitory potential of *Ginkgo biloba*, *Echinacea purpurea*, and *Serenoa repens* on the metabolic activity of cytochrome P450 3A4, 2D6, and 2C9. J Altern Complement Med. 11(3): 433-439. \*

Zoutewelle G, Van Wijk R. (1990) Effects of *Echinacea purpurea* extracts on fibroblast populated collagen lattice contraction. Phytotherapy Research 4: 77-81.