

Echinacea - Echinacea spp.

Echinacea Tincture Class - Tilgner - class@herbaltransitions.com



Echinacea definition:

The below definition comes from Stearn's Botanical Latin-4th ed. "Echinatus (adj., armed with numerous small rigid hairs or straight prickles or spines or spiny projections, from echinus, 'hedgehog, sea-urchin' hence 'prickly husk of sweet chestnut', echinulatus, with very small prickles, echinulate."

Family: Asteraceae

Species: There are three main types of Echinacea that are used medicinally. *E. angustifolia*, *E. pallida* and *E. purpurea*. Of the three types, *E. purpurea* is the most commonly used. There are other spp. which you can also use medicinally such as *E. tennesseensis*.

Historic Use: *Echinacea angustifolia* - narrow leaved cone flower, was used by many of the native Americans in the Great Plains area of central United States. Locally, they used the plant topically as a poultice for venomous bites such as snake bites and over enlarged glands. It was also used topically for toothaches. They used it for a variety of septic infections.

They usually chewed the root and applied it as a poultice or made a tea to take internally.

It was introduced to physicians by Dr H.C.F. Meyer and Dr. John King in 1887 as an alterative and antiseptic. The tincture was used both internally and externally in cases of boils, ulcers of the throat and extremities, as well as for wasp/bee stings. Meyer claimed people recovered from rattlesnake bites within 2-12 hours by using the tincture both externally as a wash and ingesting it. In 1906 it started being used by homeopaths and main stream physicians. It was used for infected wounds, septicemia and bites and stings of various poisonous critters. In 1921, & 1922 Echinacea ranked first out of 239 plant remedies sold by the Lloyd Brothers. In a study done a few years ago, it was the 4th largest seller on the U.S. herbal market.

The eclectic physicians used Echinacea to help prevent infection and aid in healing after injuries and surgeries. It was also used in septic conditions (externally as well as internally) such as gangrene, lymphangitis, boils, carbuncles, feverish conditions, and abscesses. In the early 20th century it was used externally over lymph nodes much more than it is now.

Species: *Echinacea angustifolia* and *purpurea* are the most commonly used species with *Echinacea pallida* probably third most used. *Echinacea purpurea* is used the most. I personally find *pallida* to be lacking in activity. It also tastes quite different. The root of *pallida* has an unusual flowery taste quite unlike other roots. It does not work for me as well as the other two. I prefer *angustifolia* for long term storage of dry root. It stores better than *purpurea*. I tend to use *purpurea* fresh more than *angustifolia* as it grows best where I live and is very active. I have no need to use *angustifolia* unless I want long term storage.

Echinacea angustifolia is becoming endangered so if using *Echinacea angustifolia* only organic should be used.

Parts used: Root mostly, seeds and flowers also. Juice of the above ground *purpurea* has been used in research and has shown it inhibits hyaluronidase, decreases inflammation and enhances wound healing. Internally, it was shown to enhance local antimicrobial therapy. I have used the juice internally and do not find it to be as strong as the root tincture. It may be due to the fact that it has been preserved juice. Perhaps fresh juice would work better. I have used fresh leaf poultices on stings and find them helpful.

It is best to use *Echinacea purpurea* in Willamette Valley area as it grows easily here and works fantastic clinically: *Echinacea purpurea* - root, seed and flowers - best part to tincture is root - extracts easier than seed, stronger than flower. All can be used though.

Taste/smell: Root is slightly sweet, pungent, aromatic, tingles the tongue with most





species. (*pallida* root tastes like a flower) The seed and flower will both tingle the tongue also. The seed tastes a bit cardboard like also. The flower is very prickly. It increases salivation when chewed. This is due to the alkylamides.

Constituents: *Echinacea angustifolia* roots: polysaccharides (Inulin and fructose); phenylpropanoids (echinacoside, chicoric acid, cynarine and caffeic acid); alkamides (complex of isobutylamide, the numbing taste); alkaloid (tussilagine 0.006%) and oils (0.1%, palmitic and linolenic acids).

E. pallida roots: phenylpropanoids (echinacoside and chlorogenic acid); alkamides (trace amounts); polyacetylenes; oils (0.2 - 2.0% ketoalkenynes).

E. purpurea root: polypropanoids (chichoric acid 0.6 - 2.1%); alkamides (complex of isobutylamides); alkaloid (tussilagine and isotussilagine); polysaccharide (fructose based) and oils

(0.03 - 0.2%, caryphyllene, humulene, palmitic, linolenic acids and germacrene D.

E. purpurea areal: polypropanoids (cichoric acid); alkylamides. (complex of isobutylamides); flavonoids (rutoside, quercetin, quercetin-7-glucoside and kaempferol-3-rutinoside and essential oils.

It should be noted that the polysaccharides are not soluble in alcohol (Etoh), polypropanoid is soluble in medium strength Etoh and Alkamides only in very strong Etoh. The constituents desired in the final product will help determine if the product should be a powder (capsule or tablet), tea, or tincture.

An isobutylamide called echinacein causes the tingling sensation and has a mild anesthetic effect. Other isobutylamide constituents have also been identified in both *purpurea* and *angustifolia* and have been shown to be antiinflammatory. However, the isolated isobutylamides were less potent than the whole extract. Alcohol extracts of *angustifolia*, *pallida* and *purpurea* all showed enhanced phagocytic activity in mice in vivo when given orally. The increase phagocytic activity correlated with the isobutylamides in *angustifolia* and *purpurea* and with polyacetylenes in *pallida*.

The caffeic acid derivative echinacoside comprises about 1% of the dry weight of *angustifolia* root and has a weak activity against staphylococcal and streptococcal bacteria.

The most significant effect of caffeoyl conjugate components is their hyaluronidase inhibiting activity. Echinacoside is a caffeoyl conjugate of Echinacea with known anti-hyaluronidase properties. It is found in Echinacea *angustifolia* and *pallida* root. Chicoric acid and caffeic acid had the greatest antihyaluronidase activity when tested in research. All parts of dried Echinacea *purpurea* showed chicoric acid as the major derivative and substantial amounts of caffeic acid. Chicoric acid has also been shown to inhibit hyaluronidase.

Hyaluronidase is an enzyme that catalyzes the breakdown of hyaluronic acid. Hyaluronic acid is the intercellular glue. Hyaluronidase which is found in venom of some snakes and spiders and is secreted by some bacteria can break down the intercellular glue and allow the venom or bacteria to move more freely through the tissues.

Echinacea's purified polysaccharide, arabinogalactan, activates macrophages to cytotoxicity against tumor cells and microorganisms, as well as produces tumor necrosis factor (TNF), interleukin-1, interleukin-6, interferon-2 and slightly increases T-lymphocyte proliferation. 59, 60, 61, 298 It therefore enhances the immune system's resistance to infections and stimulates wound healing. 61,62 The root oil has inhibited leukemia cells in vitro and in vivo. 61

Teas contain polysaccharides (water soluble) which are thought to be immune-enhancing but it is not known if they are absorbed or digested. They may however effect the Peyer's patches (gut lymph tissue). Alcohol precipitates polysaccharides making them unavailable.

Tendencies: Cooling, drying, stimulating.

Dosage: Infusion: 1/2 - 1 teaspoon per cup of water; or 1:1.5 fresh + dry liquid



extract: 10-120 drops 1-4 times per day. If using for an acute infection can use 120 drops as much as every 2 hours for first 24-48 hours.

Mental picture and specific indications: Echinacea is indicated for exhaustive states with chilliness, offensive discharges, lymphatic congestion with swollen glands, mental confusion, dull mind, dizziness, tendency to skin eruptions and low grade continuous fevers, as well as high grade fevers.

Use: (a) Antimicrobial, (b) Anti-inflammatory, (c) Antiviral, 60 (d) Antibacterial, (e) Antifungal, (f) Slight stimulation of the adrenal cortex, (g) Stimulates leukocytes, 56 (h) Inhibits hyaluronidase, (i) Sialagogue, (j) Enhances phagocytosis. 255

Note: Clinical information for *E. angustifolia* and *E. purpurea* species is basically interchangeable in most circumstances.

In vitro and in vivo studies show that *E. purpurea* stimulates the immune system in a non-specific way by activating macrophages, enhancing phagocytes and stimulating the secretion of TNF and interleukins 1 and 6.

Echinacea protects the gut from harmful micro-organisms due to its enhancement of phagocytosis. It also decreases inflammatory allergic reactions in mild food allergies and stimulates gastric healing. The constituent, echinacin, has been shown to be useful in treatment of tonsillitis in pediatric practices. 255 Due to its specificity for infectious conditions, it is used for colds, influenza, wounds, infections, allergies, bacterial and viral disease, swollen glands and gum disease.

This plant can be used internally and externally at the same time for many therapies. Ear infections can be treated internally while using the tincture externally in the ear. The tincture works wonders externally on brown recluse spider bites while also being used internally in high doses.

Contraindications: Echinacea is not associated with acute or chronic toxicity. 61 Although there have been reports that it is contraindicated in auto-immune diseases, many physicians have used it with patients who have auto-immune diseases without noticing side effects. Due to arabinogalactan's ability to increase production of TNF-alpha, there is concern about AIDS patients taking echinacea. Many clinicians give whole plant liquid extracts that contain little or no arabinogalactan to AIDS patients without any problems.

Additionally, it has been thought by many herbalists that echinacea should only be used short term because its effects stop after a period of 1-3 weeks. However there are many individuals who have used this herb long term with successful results. An 8-week double-blind study in 1989 showed echinacea was useful in prevention of respiratory infections. Another study using oral echinacea for 10 weeks showed prevention of recurrent bouts of vaginal candidiasis. 256

While it is infrequently done, when used parenterally, Echinacea can cause nausea, vomiting and fever reactions. This is usually dose-dependent. In persons with diabetes, hypersensitivity reactions have occurred; these include rash, itching, occasional swelling of the face, breathing difficulty, dizziness and a drop in blood pressure.

The immune stimulating properties of Echinacea may interact with immunosuppression drugs like Cyclosporin or other anti-rejection drugs. I have used Echinacea in people with immunosuppressive drugs, but for only short periods of time when necessary and I watch them carefully.

Hyaluronidase is one of three enzymes attached to the acrosomal membrane located on the head of the male spermatozoon. This enzyme clears a path for the sperm to fertilize the egg. Men taking large amount of echinacea might experience some infertility, though this has not been studied.

Growing Echinacea purpurea: A perennial. Seeds will self sow or can be collected in the fall. Be sure to get them before the birds do. They birds love the seed and it will disappear if you don't watch carefully. Stratification is usually helpful although not always necessary with *purpurea*. Stratification is necessary for *angustifolia* and *pallida*. They must both be stratified for 30 days. This can be done with a freezer bag, some slightly moist sandy soil and seeds. The seeds and soil are placed in the bag and the bag is put in the freezer for 30 days to simulate winter time. Take them out and they can now be planted into trays or directly into the garden.

Flower and seed available 2nd year (few 1st year), root available 3rd year or 2nd if good soil. Grows to 2' first year, 4' second year. Yields about 1200# per acre

Negative Research from a few years ago: Not good research. Lack of verification of correct plant material. You should never conduct research with a plant without verifying its identity first. Lack of use of correct part of the plant - used leaf juice in research. I find the leaf juice to have be useless internally personally as do many of my colleagues. Perhaps fresh leaf juice would be useful but we all tried a preserved product from off the market. There was also the problem of not giving a high enough dose of the herb. There is a tremendous amount of research that has been amassed over the years to support Echinaceas efficacy.