

## Echinacea

Echinacea is one of the top selling herbal products in the US with sales worth more \$US300 million dollars annually. A member of the daisy family, it is claimed to treat abscesses, burns, eczema, liver cancer, urinary tract infections, varicose leg ulcers, boils, and gingivitis, but mostly it is used to treat upper respiratory infections.

It is:

- sold as capsules, pills, tinctures, teas, creams for topical use, and toothpaste, or in combination with other compounds
- marketed to children as fizzy tablets also containing vitamin C
- purported to support and promote the natural powers of resistance of the body, especially in infections of the nose and throat
- unproven in many clinical trials to prevent or ameliorate the symptoms of upper respiratory tract infections
- unproven in its claimed immune-enhancing effects
- a known cause of asthma and anaphylaxis in allergic patients

Echinacea was used by American Indians to treat snake bite and relieve fever, and was incorporated into a 19<sup>th</sup> century wonder cure called Meyer's Blood Purifier. With the advent of sulfa antibiotics, echinacea lost its popularity as an anti-infective agent. Most recent research has been carried out in Germany, where echinacea extracts are injected, a procedure not pursued in the US or elsewhere.

Echinacea is a member of the Asteraceae [Compositae] family, which includes sunflowers, daisies and the potent allergen, ragweed. Three species are used medicinally—*E. angustifolia*, *E. pallida* and *E. purpurea*, the latter being the most commonly used in New Zealand. These 'coneflowers' are perennial herbs, and production involves drying the roots or juicing the stems, flowers and roots, or ethanolic extraction of various compounds. The method of manufacture, the time of harvest and the part of the plant harvested are all variables that need to be taken into account when attributing clinical efficacy to echinacea. The root is said to contain the highest levels of active components and the stem to be less desirable. Claimed potency is said to depend on how long the herb is stored before use and how finely it is powdered and processed.

Studies show that there are indeed many potentially pharmacologically active compounds in echinacea, but whether there is sufficient present in crude extracts to be effective is debatable. Echinacoside is claimed to be a natural antibiotic comparable to penicillin, but its concentration is not likely to be sufficient to have any significant effect. Polysaccharides, such as heteroxyylan and arabinoglycan, are touted as having major pharmacologic effects on the immune system, though these are likely to be digestively destroyed when taken orally. Echinacea has a pungent smell and taste caused by echinacein, an isobutylamide that is responsible for a tingling sensation if fresh stems are chewed. Echinacein is said to counteract the invasion of tissues by bacteria. This may be so

if injected, but orally administered preparations are not so likely to function. Clinical trials are hampered by the fact that many of these products lack appropriate quality control and cannot be standardised because the active ingredient(s) has not been defined.

In a recent study of 40 healthy male volunteers who were administered the freshly expressed juice of *E. purpurea* or placebo, echinacea did not enhance the immune system as measured by the phagocytic activity of white blood cells and the production of cytokines. Researchers were surprised to find that echinacea decreased the levels of serum ferritin, as that had not been predicted. They concluded that the 'immune stimulation' does not result from oral intake.

Pharmacies and health food shops in Wellington were found to recommend echinacea most commonly as a treatment for a patient presenting with obvious symptoms of asthma following a chest infection.

Lack of efficacy in preventing upper respiratory infection was reported in a trial of 302 volunteers in Germany. They received oral ethanolic extracts of echinacea roots, or placebo, for 12 weeks. The number of volunteers who became infected and the length of time until they became ill did not differ significantly between the two groups. Even if there is a relative risk reduction attributable to taking echinacea, there are dangers in taking it for any length of time. The recommended treatment period is less than 8 weeks because of the risk of liver poisoning. In

fact, people who use other hepatotoxic drugs, such as anabolic steroids, methotrexate or ketoconazole, are warned not to take echinacea.

Several other trials back up these results, including one where 117 volunteers were treated with echinacea and then challenged with a rhinovirus. Similar numbers of people caught colds whether they took echinacea or placebo and the severity of symptoms did not differ.

A 2002 Australian study of adverse drug reactions found that 51 cases including examples of anaphylaxis, acute asthma and skin rashes were attributable to echinacea ingestion. Several patients required hospitalisation. Americans with known sensitivity to ragweed are warned not to take echinacea. Patients with immune diseases, such as lupus, multiple sclerosis or AIDs are likely to suffer adverse reactions to echinacea, though there are no warnings on containers available in supermarkets, pharmacies and health food shops.

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*As with many herbs, it's unsettled whether echinacea is useful. Also, many herbal products are not standardized as to what's in them, so even if something is useful, you can't be sure that the quality control or dosage that makes it useful is in the bottle. The FDA doesn't regulate that.*

*Some dietary supplements do not contain the ingredients or the amount of the ingredients declared on the label. For example, in laboratory testing of 25 separate Echinacea products, only 14 (56 percent) were found to have the amount and type of Echinacea and polyphenol (or marker compound) claimed on the label*

Dr Stephen Barrrett quoting a 2001 product review from ConsumerLab.com

Just because it is a herb or marketed as a 'natural' product, does not guarantee it is either effective or safe.