

The Health Benefits of Echinacea

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✓ Fact Checked

August 15, 2022

STORY AT-A-GLANCE

- › Echinacea is a popular remedy for upper respiratory infections, such as the common cold and flu. Scientists believe that the antiviral effect against enveloped coronaviruses would make it helpful in the prevention of COVID-19
- › Studies evaluating echinacea demonstrate that extracts support the innate and adaptive immune system through several pathways. Additionally, echinacea could lower chronic inflammatory markers and alleviate memory impairment
- › Echinacea has demonstrated the ability to suppress cancer cell growth in the lab by triggering pancreatic and colon cancer cell apoptosis. Echinacea can help lower anxiety levels and one study demonstrated some antidepressant activity
- › Native Americans used echinacea to treat skin disorders, including eczema and psoriasis. Topical use may speed wound healing and has demonstrated significant antiaging activity
- › People who are allergic to flowers in the daisy family or those with atopy may have a higher risk of allergic reaction to echinacea, including anaphylaxis; people taking an immunosuppressant medication or tamoxifen should not use echinacea

Echinacea is also known as purple coneflower. It is one of the hardiest perennial plants indigenous to America. Much of the knowledge that we have about the medicinal use of echinacea is derived from Native American use.¹ Samples of the plant have been found in Lakota Sioux village sites dating from the early 1600s.

The herb was most popular with Native Americans of the Great Plains, who used the herb to treat snake and poisonous insect bites.² Archaeologists have found evidence that echinacea was used to treat infections and wounds for more than 400 years.³ There is evidence that it also has been used to treat blood poisoning, diphtheria, syphilis and malaria.

The plant was first identified during the Lewis and Clark expedition that ended in 1806. In 1885,⁴ Dr. H.C.F. Meyer learned of the plant's qualities and contacted a prominent eclectic physician in Cincinnati, Dr. John King, and pharmacist John Uri Lloyd.

The two first thought Meyer's claims were exaggerated but they eventually tried it and echinacea became one of the most popular herbs used during the eclectic era that lasted until the 1930s. "Regular" Western medical establishment criticized the use of echinacea even though reports in the medical literature showed successes with teeth and gum disease, typhoid, puerperal fever and in veterinary medicine.

The popularity of echinacea began declining after the 1930s when antibiotics were introduced.⁵ However, throughout the 20th century, it became increasingly popular in Germany where much of the scientific research has been conducted. Thus far there have been over 1,000 papers published.⁶

As interest in the immune system rose in the scientific community, so has the popularity of echinacea developed in the consumer industry. Echinacea is a member of the daisy family (Asteraceae),⁷ which includes over 20,000 species of flowers, shrubs and trees.

Plants in this category include sunflowers, dandelions, artichokes, ragweed and sage. Three main types of echinacea are used for medicinal purposes. These include *Echinacea purpurea*, *Echinacea angustifolia* and *Echinacea pallida*.⁸

Echinacea Supports Your Immune System

According to the American Botanical Council, many of the clinical studies done with echinacea used fresh stabilized echinacea purpurea juice.⁹ The most common uses of echinacea are related to how it impacts your immune system.

One animal study¹⁰ evaluated the extracts from the three widely used species for their immune-modulating properties. They found similar changes in all three extracts to immune cell populations and functions, including natural killer cell cytotoxicity. Antibody response increased equally by all three extracts and animals treated with *angustifolia* and *pallida* had higher T-cell proliferation.

Interestingly, all three altered the cytokine production in spleen cells and significantly increased interferon- γ production while simultaneously inhibiting the release of tumor necrosis factor-alpha and interleukin 1-beta. The researchers concluded that the findings demonstrated a wide spectrum modulation of innate and adaptive immune responses, with *angustifolia* and *pallida* having greater anti-inflammatory potential.¹¹

One animal study¹² demonstrated that echinacea can significantly reverse cyclosporine-induced decreases in red blood cell and white blood cell counts with either a low dose or high dose of *Echinacea purpurea* root extract as an immunostimulant. The researchers concluded that the data showed echinacea extract could ameliorate some hematological changes.

Echinacea Helps Fight Respiratory Viruses – Including COVID

Echinacea may well be best known for its antiviral effects against the common cold and influenza. In one study published in *Integrative Cancer Therapies*, echinacea was found to reduce the severity and duration of colds if it is administered as soon as symptoms appear.¹³

Although research has been inconsistent, echinacea was widely used in traditional medicine to treat common upper respiratory infections. There is evidence that at the very least, echinacea can reduce the symptoms and duration of the common cold and flu. A 2012 paper¹⁴ looked critically at the past research evaluating the efficacy of echinacea preparations against the common cold.

They found the variety in results may be due to a lack of consistent chemical composition of the extract. However, despite the lack of consistency in research, there

is a trend in the beneficial effect of echinacea. Importantly, the studies repeatedly demonstrated the safety of the preparations, including in children.

Another 2004 literature review¹⁵ of 14 studies found supplementation reduced the duration and helped prevent symptoms of the common cold. The meta-analysis looked at the incidence and duration of colds and found using echinacea reduced the odds of getting a cold by 58% and the duration of a cold by one to four days.

In 2014, a Cochrane Database of Systematic Reviews¹⁶ looked at 24 double-blind trials with 4,631 participants to compare echinacea preparations against placebos. The authors concluded that there was a weak benefit from some echinacea products and prophylactic use showed positive trends, “although potential effects are of questionable clinical relevance.”

As might be expected after 2020, echinacea has also been tested against SARS-CoV-2, the virus that causes COVID-19. One study¹⁷ published in 2022 in the journal *Microorganisms* acknowledges that echinacea purpurea has shown broad inhibition of coronaviruses and SARS-CoV-2 in the lab. The researchers reviewed available randomized, blinded and controlled human studies using echinacea as a preventive treatment against coronavirus infections.

Two randomized controlled trials were evaluated, one with 755 adult participants and the other with 203 children. The researchers found that the results from these studies confirmed echinacea had antiviral activity against enveloped respiratory pathogens and extrapolation of these effects indicate that it would be helpful in the prevention of COVID-19.

Reduces Inflammation and May Fight Cancer

Your body uses inflammation to promote healing and defend itself. However, sometimes inflammation becomes chronic, which can raise your risk of disease and other health problems. One animal study showed that echinacea reduced inflammatory markers and reduced memory loss that was caused by inflammation.¹⁸

The researchers investigated chicoric acid, which was extracted from echinacea and chicory. The researchers found that chicoric acid regulated inflammatory mediators and cytokines and alleviated memory impairment. They found the data suggested chicoric acid found in echinacea may be an intervention for neuroinflammation in diseases such as Alzheimer's disease.¹⁹

In another study,²⁰ researchers demonstrated that supplementation with echinacea and ginger reduced pain in people with osteoarthritis and demonstrated a decrease of 0.52 cm in knee circumference. The data suggest that the combination of echinacea and ginger could help reduce pain and chronic inflammation in people with osteoarthritis.

Chronic inflammation increases the risk of developing cancer. In addition to helping to reduce inflammation, echinacea extract has demonstrated the ability to suppress cancer cell growth in the lab.

In one study,²¹ an extract triggered cancer cell death and in another,²² extracts from all three echinacea plants killed human pancreatic and colon cancer cells by stimulating apoptosis. Another five-year animal study demonstrated that daily consumption of echinacea extended the life span of mice, including those with leukemia.²³

Mental Health Benefits From Echinacea

According to the National Institute of Mental Health,²⁴ anxiety affects approximately 19.1% of all U.S. adults in the last year, with the disorder found in more females than males. They estimate that 31.1% of all adults will experience some type of anxiety disorder during their lifetime.

In the past years, echinacea has also been investigated for the potential it holds to aid in the treatment of anxiety. One animal study²⁵ evaluated five echinacea preparations in the treatment of anxiety and found three decreased anxiety in a wide dose range. The anxiolytic effects were consistent across three tests and had an excellent safety profile.

A second study²⁶ tested both the anxiolytic potential and psychotropic side effects of echinacea using an animal model and human participants. They found that despite high

doses, there were no behavioral signs of discomfort or lethality in the rats using *echinacea angustifolia*.

The same pharmacological formulation was given to human subjects for one week. The results revealed that patients taking a high dose had a lower anxiety score within 3 days and the effect remained stable over the course of the seven-day treatment, as well as for the two weeks after the patient stopped taking the echinacea.

However, the results of studies testing *echinacea angustifolia* against anxiety have not been consistent. A 2021 study²⁷ enrolled 104 participants in a randomized, double-blind, placebo-controlled trial where participants were administered 40 mg and 80 mg of echinacea extract for six weeks.

Researchers found there was no associated improvement in anxiety as compared to the placebo. However, the results indicated echinacea had some antidepressant effects. By comparison, another double-blind, placebo-controlled trial²⁸ used *echinacea angustifolia* extract on participants who scored high on the State Trait Anxiety Inventory. They were administered 40 mg of echinacea or a placebo twice daily for seven days and then tested again at the end of treatment.

In this group, the researchers found those taking echinacea scored 11 points lower at the end of treatment as compared to three points lower in the placebo group. Interestingly, all adverse effects, which were rare and mild, were in the placebo group. The findings suggested to the researchers that echinacea could have a significant beneficial effect on anxiety.

May Help Skin Aging and Wound Healing

Native Americans also used echinacea for a broad range of skin disorders, including wound healing, eczema, and psoriasis. The antioxidant properties in echinacea may help skin disorders with topical application. One study²⁹ evaluated the dermatological efficacy of *Echinacea purpurea* cream and gel on 10 volunteers aged 25 to 40 years.

The cream and gel were evaluated after six months of storage for shelf stability. The researchers found the total phenolic content and antioxidant activity were only stable for two months and four months respectively when the products were stored at 4 degrees Celsius (39.2 degrees Fahrenheit). Shelf life could be extended to seven months when either alpha-tocopherol or disodium editate was added to the product.

When tested on the 10 healthy subjects, researchers found that there was no irritation to the skin from either the cream or gel and that it improved skin hydration and reduced wrinkles.³⁰ A study³¹ published in 2021 tested the effects of 16 herbal extracts after topical application for antiaging effects.

The researchers found that Echinacea purpurea had the most significant effect on the enzymes that break down collagen, protein and hyaluronic acid. The data suggest there is promising potential since inhibiting these enzymes plays a significant role in skin antiaging. Other animal studies tested echinacea on wound healing using animal models.

In one study,³² researchers applied one of four treatments to excisional wounds over 21 days. The treatments were either 20% topical Echinacea purpurea or 10% ointment, zinc oxide ointment, eucerin cream or a control. The healing process was quantified daily using digital photography and image analysis software. The researchers also performed histopathologic examinations throughout the treatment.

The wound healing was scored using parameters such as edema, fibroplasia, wound contraction and epithelial regeneration. According to histometric findings, the rats receiving 10% Echinacea purpurea had a higher skin contraction rate and the histopathologic response showed a better overall healing rate than other groups.³³

Side Effects and Allergic Reactions

According to the National Center for Complementary and Integrative Medicine,³⁴ echinacea is considered safe for most adults when used by mouth for a short term.

Women who are pregnant, trying to become pregnant, or breastfeeding should avoid using echinacea. The most common side effect is nausea and stomach pain.

Side effects appear to be more common in people who have allergies to other flowers in the Asteraceae family. One study published in the *Journal of Allergy and Clinical Immunology*³⁵ theorized that people who had an allergy to ragweed would have a higher likelihood of having a positive skin reactivity test to echinacea than those who are not allergic to ragweed.

The pilot study showed a high prevalence of sensitization to echinacea when the subjects were allergic to ragweed and had no previous exposure to echinacea.

Another group of individuals who have a higher likelihood of an allergic reaction to echinacea is those with atopy, or a higher sensitivity reaction associated with immunoglobulin E. Atopy can be expressed as atopic dermatitis (eczema), allergic rhinitis and asthma.³⁶

A case study published in 1998 related the circumstances of a woman with atopy who experienced anaphylaxis after taking a commercial extract of echinacea.³⁷ Another paper published in the *Annals of Allergy, Asthma and Immunology* found similar results. The researchers wrote:

"Atopic subjects are also overrepresented in those experiencing reactions to echinacea. The possibility that cross-reactivity between echinacea and other environmental allergens may trigger allergic reactions in "echinacea-naïve" subjects is supported by the Australian data. Given its widespread (and largely unsupervised) community use, even rare adverse events become inevitable. Atopic patients should be cautioned appropriately."

While echinacea has been widely used for centuries, it is still necessary to exercise caution. High doses may lead to insomnia, diarrhea, nausea, vomiting and dizziness.³⁸ People who are taking immunosuppressant medications or tamoxifen should not use echinacea. Echinacea may also interfere with other medications, so talk with your pharmacist or physician to be sure it's safe for you to take.

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