

Stimulation/Regulation of the Immune System

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Overview

Immune System: *protects against infection by identifying and killing pathogens (bacteria, viruses and parasites, et al.).*

- **Bacterial infection:** urinary tract infection (*Escherichia coli*), tuberculosis (*Mycobacterium tuberculosis*), anthrax (*Bacillus anthracis*)
- **Virus infection:** flu (*Influenza virus*), herpes (*Herpes simplex virus*), AIDS (Human immunodeficiency virus)
- **Resulted immune deficiency from Radiation therapy for the treatment of malignant tumors**

Dietary Products Used for Stimulation or Regulation of the Immune System

- Astragalus
- Cats Claw (*Uncaria tomentosa* and *Uncaria Guianensis*)
- Colostrum
- *Echinacea* spp.
 - E. purpurea*
 - E. angustifolia*
 - E. pallida*
- Eleuthero (*Acanthopanax senticosus*)
- Ginseng (*Panax* spp.)
- Glutamine
- Goldenseal (*Hydrastis canadensis*)
- Perilla Seed oil (*Perilla frutescens*)
- Bovine and/or Shark cartilage
- Ashwagandha
- Feverfew
- Ginkgo

*A few of these are also used for osteoarthritis and rheumatoid arthritis

Astragalus (*Astragalus membranaceus* Fisch.)

- Also called: bei qi, huang qi, oqi, hwanggi, milk vetch
- Historically, astragalus has been used in traditional Chinese medicine (TCM), usually in combination with other herbs, to support and enhance the immune system. Used for deficiency of 'chi' (life force) such as lack of energy and fatigue
- Still widely used in China for chronic hepatitis and as an adjunctive therapy in cancer.
- Also used to prevent and treat common colds and upper respiratory infections.
- Astragalus has also been used for heart disease.
- The root of the astragalus plant is typically used in soups, teas, extracts, or capsules.
- Astragalus is generally used with other herbs, such as ginseng, angelica, and licorice.



Astragalus, Steve Foster



www.herbpalace.com

Astragalus, con't

- The polysaccharides and saponins in the roots thought to be responsible for the bioactive properties.
- Yet the roots also contain a wide range of additional secondary plant products (amino acids, coumarins, flavanoids, isoflavanoids) that may also contribute.
- Used in the cold and flu season as a preventative.
- In vitro studies show that astragalus extracts can inhibit bacterial and virus's;
- Extracts appear to enhance the body's normal immune system such as T cells, lymphocytes, and neutrophils. One US study showed that extracts can boost T-cell levels close to normal range in cancer patients.
- Another study with mice showed that extracts may prevent influenza virus possibly by increasing phagocytotic activity of the white blood cells of the immune system.
- Astragalus may have a role to play with cancer patients as some have responded favorably to this extract (higher remission rate and improving a lowered immune ability following chemotherapy and radiotherapy);
- Extracts exhibit broad-based antioxidant and hepatoprotective effects (due to saponins and flavonoids?)
- From NIH: Astragalus appears safe but may interact with medications that suppress the immune system, such as the drug cyclophosphamide taken by cancer patients and similar drugs taken by organ transplant recipients.

Cats Claw (*Uncaria tomentosa* & *Uncaria Guianensis*)

- Cat's claw, uña de gato
- Cat's claw grows wild in many countries of Central and South America (Peru, Brazil, Bolivia), especially in the Amazon rainforest. The use of this woody vine dates back to the Inca civilization.
- The inner bark is used in TM as an immune system stimulant and modulator.
- It has been used for a variety of health conditions, including viral infections (such as herpes and HIV), Alzheimer's disease, cancer, and arthritis.
- Cat's claw has been used to support the immune system and promote kidney health, as well as to prevent and abort pregnancy.
- There is not enough scientific evidence to determine whether cat's claw works for any health problem, including arthritis, HIV, or cancer.
- NIH summarized Cats claw in the following manner: Small studies in humans have shown a possible benefit of cat's claw in osteoarthritis and rheumatoid arthritis, but no large trials have been done. In laboratory studies, cat's claw stimulates part of the immune system, but it has not been proven to reduce inflammation or boost the immune system in humans.



U: www.maxlabs.com

L: Dried bark of Cats Claw, Steve Foster, photo

Cats Claw (*Uncaria tomentosa* & *Uncaria Guianensis*)*

- There is much debate as to the chemistry, origin and authenticity of the Cat's Claw with chemotypes and species varying in the bioactive compounds which pentacyclic and/or tetracyclic oxindole alkaloids.
- Both species exhibit antioxidant and anti-inflammatory activity
- The pentacyclic oxindole alkaloids (POAs) are the more common one in which Cat's Claw is often standardized.
- Another debate- is which plant part is most effective? Stem bark vs root bark (the former more sustainable)
- For immune modulation, science is stronger than for osteoarthritis and even for cancer for which it is sold today.

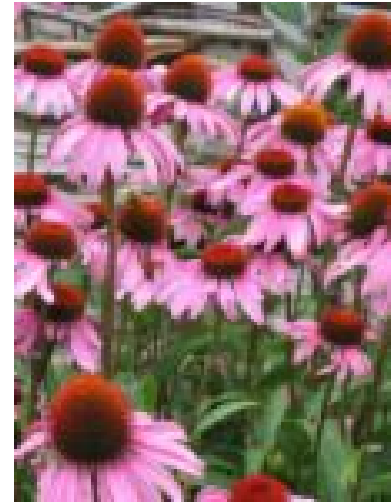
Una de Gato



The Anti-Oxidant



Echinacea spp.

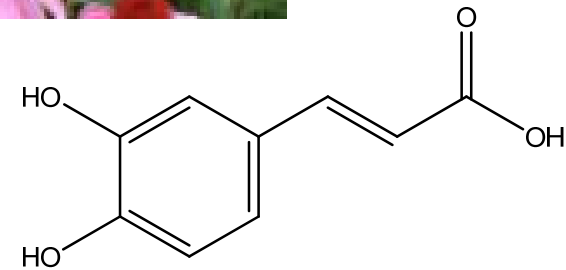


- From this American herbs there are 9 species, with *E. purpurea*, *E. angustifolia* and *E. pallida* the most important.

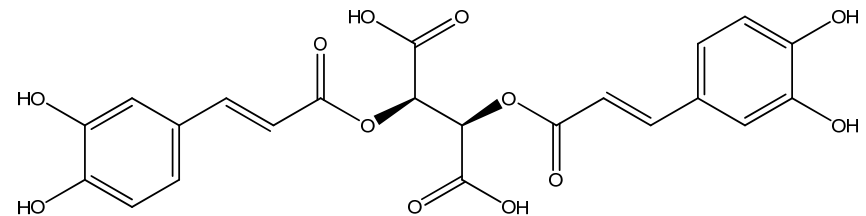
, this is an American herb

- One of the most popular herbs used to improve the immune system and for colds and flu's.

- Active compounds include polysaccharides, Caffeic acid derivatives, nitrogenous compounds such as alkylamides and alkaloids.



Cafteric acid



Cichoric acid

Echinacea for the Prevention and Treatment of Colds in Adults: Research Results and Implications for Future Studies

Updated October 2005

On July 28, 2005

- *The New England Journal of Medicine* published the results of a study of Echinacea for the prevention and treatment of the common cold that was funded by the National Center for Complementary and Alternative Medicine (NCCAM).¹ The research was conducted by Dr. Ronald Turner, of the University of Virginia School of Medicine, Dr. Rudolf Bauer, Karl-Franzens Universitaet, Graz, Austria, and collaborators at Clemson University in South Carolina.
- The research team tested three preparations of the roots of a species of Echinacea called *Echinacea angustifolia*, which prior smaller studies had found to benefit adults with the common cold. The three preparations were made by extracting the root of *E. angustifolia* using procedures that represent some of the different ways that Echinacea is available and used to treat the common cold.
- *E. angustifolia* was chosen for the study as it is one of the species endorsed by the World Health Organization for treating the common cold.² The study was designed to test if Echinacea would help prevent or treat cold symptoms, since this is how Echinacea is often used by consumers.

Echinacea for the Prevention and Treatment of Colds in Adults: Research Results and Implications for Future Studies

Updated October 2005 - cont

On July 28, 2005

- In the study, 437 healthy adult volunteers were assigned at random to receive one of the three *E. angustifolia* preparations or a placebo. The volunteers received various combinations of Echinacea and/or a placebo in two phases: a "prophylaxis" (i.e., preventative) phase and a treatment phase. The prophylaxis phase lasted 7 days. On the seventh day, the already treated volunteers were exposed to a nasal spray containing a virus that induces signs and symptoms of a cold in about 2 days. Then, the volunteers were isolated for 5 days while the research team observed and tested them, using state-of-the-art measurements and instruments, as to the appearance and severity of cold signs and symptoms.
- In this study, the researchers found that none of the three preparations of *E. angustifolia* at the 900 mg per day dose had significant effects on whether volunteers became infected with the cold virus or on the severity or duration of symptoms among those who developed colds. However, critics of this study believe the dose of *E. angustifolia* used was too low
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- Quality of source material, timing, and standardization all issues

Source: NIH

Ginseng

One of the most important herbs in eastern herbal medicine.

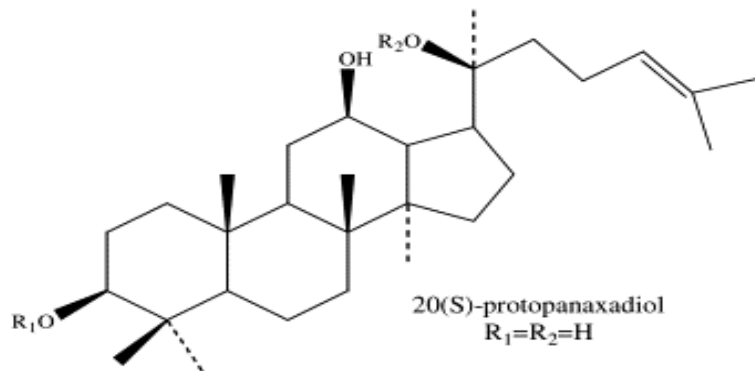
Used for thousands of years to combat psychophysical tiredness and as a tonic.

Pharmacological activity: free radical scavenging activity, immunological effects, action on the central nerve system & metabolic activity, much more.

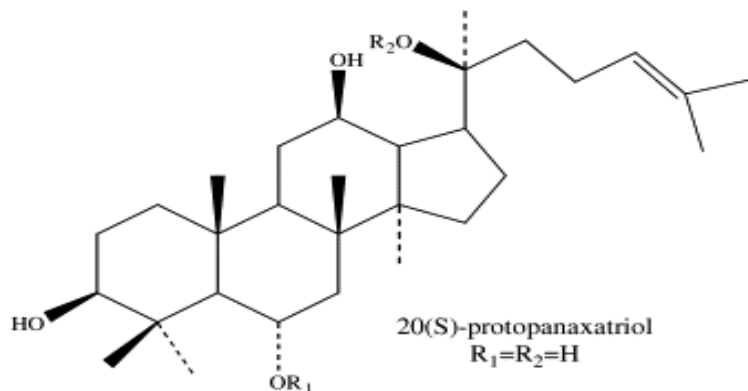
The saponins (ginsenosides) are the main components and marker compounds inside (see U of Illinois's research and others.).



Structures of the major ginsenosides.



Ginsenoside	R ₁	R ₂
Rb ₁	Glc ² -Glc	Glc ⁶ -Glc
Rb ₂	Glc ² -Glc	Glc ⁶ -Ara(p)
Rc	Glc ² -Glc	Glc ⁶ -Ara(f)
Rd	Glc ² -Glc	Glc
Malonyl-Rb ₁	Glc ² -Glc ⁶ -mal	Glc ⁶ -Glc
Malonyl-Rb ₂	Glc ² -Glc ⁶ -mal	Glc ⁶ -Ara(p)
Malonyl-Rc	Glc ² -Glc ⁶ -mal	Glc ⁶ -Ara(f)
Malonyl-Rd	Glc ² -Glc ⁶ -mal	Glc
Rg ₃	Glc ² -Glc	H
Rh ₂	Glc	H
Rb ₃	Glc ² -Glc	Glc ⁶ -Xyl
Ra ₁	Glc ² -Glc	Glc ⁶ -Ara(p) ⁴ -Xyl
Ra ₂	Glc ² -Glc	Glc ⁶ -Ara(f) ² -Xyl
Ra ₃	Glc ² -Glc	Glc ⁶ -Glc ³ -Xyl
Rs ₃	Glc ² -Glc ⁶ -Ac	H



Ginsenoside	R ₁	R ₂
Rh ₁	Glc	H
Rg ₁	Glc	Glc
Rf	Glc ² -Glc	H
Rg ₂	Glc ² -Rha	Glc
F ₁	H	Glc
Notoginsenoside R ₁	Glc ² -Xyl	Glc