

## Ginseng (American ginseng, Asian ginseng, Chinese ginseng, Korean red ginseng, *Panax* ginseng: *Panax* spp. including *P. ginseng* C.C. Meyer and *P. quinquefolius* L., excluding *Eleutherococcus senticosus*)



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*While some complementary and alternative techniques have been studied scientifically, high-quality data regarding safety, effectiveness, and mechanism of action are limited or controversial for most therapies. Whenever possible, it is recommended that practitioners be licensed by a recognized professional organization that adheres to clearly published standards. In addition, before starting a new technique or engaging a practitioner, it is recommended that patients speak with their primary healthcare provider(s). Potential benefits, risks (including financial costs), and alternatives should be carefully considered. The below monograph is designed to provide historical background and an overview of clinically-oriented research, and neither advocates for or against the use of a particular therapy.*

### Related Terms:

- **General:** Allheilkrout, Araliaceae (family), chikusetsu ginseng, chosen ninjin, dwarf ginseng, *Eleutherococcus senticosus*, five-fingers, five-leaf ginseng, ginseng radix, G115®, Ginsengwurzel, ginsenosides (Rb1, Rb2, Rc, Rd, Re, Rf and Rg1), GTTC (Ginseng and Tang-kuei Ten Combination), hakusan, hakushan, higeninjin, hongshen, hungseng, hungsheng, hunseng, insam, jenseng, jenshen, jinpi, kao-li-seng, korean ginseng, hua qi shen, kraftwurzel, man root, minjin, nhan sam, ninjin, ninzin, niuhan, Oriental ginseng, otane ninjin, panax de chine, panax notoginseng, panax vietnamensis (Vietnamese Ginseng), *Panax psuedoginseng* Wall. var. notoginseng, *Panax psuedoginseng* var. major, *Panax psuedoginseng*, *Panax trifolius* L., pannag, proprietary ginseng root extract (Cold-FX, CV Technologies Inc., Edmonton, AB), racine de ginseng, renshen, sanchi ginseng, san-pi, sang, schinsent, sei yang sam, seng, shanshen, shen-sai-seng, shenshaishanshen, shenghaishen, siyoin, t'ang-sne, tartar root, true ginseng, tyosenninjin, Western ginseng, Western sea ginseng, xi shen, xi yang shen, yakuyo ninjin, yakuyo ninzin, yang shen yeh-shan-seng, yuan-seng, yuansheng, zhuzishen.
- ***Panax ginseng* synonyms:** Asian ginseng, Asiatic ginseng, Chinese ginseng, Gincosan (a combination of 120mg *Ginkgo biloba* and 200mg *Panax ginseng*), ginseng asiatique, ginseng radix, ginseng root, Japanese ginseng, jintsam, Korean red, Korean red ginseng, ninjin, Oriental ginseng, *P. ginseng*, *P. schinseng*, red ginseng, ren shen, sang, shen.
- **American ginseng synonyms:** Anchi ginseng, Canadian ginseng, North American ginseng, Ontario ginseng, *P. quinquefolius*, red berry, ren shen, sang, tienchi ginseng, Wisconsin ginseng.
- **Siberian ginseng synonyms:** *Acanthopanax senticosus*, ci wu jia, ciwujia, devil's bush, devil's shrub, eleuthera, eleuthero, eleuthero ginseng, eleutherococ, eleutherococcus, eleutherococci radix, *Eleutherococcus senticosus*, shigoka, touch-me-not, wild pepper, wu-jia, wu-jia-pi, ussuri, ussurian thorny pepperbrush.

### BACKGROUND

- The term ginseng refers to several species of the genus *Panax*. For more than 2,000 years, the roots of this slow-growing plant have been valued in Chinese medicine. The two most

commonly used species are Asian ginseng (*Panax ginseng* C.A. Meyer), which is mostly extinct in its natural range but is still cultivated, and American ginseng (*P. quinquefolius* L.), which is both harvested from the wild and cultivated. *Panax ginseng* should not be confused with Siberian ginseng (*Eleutherococcus senticosus*). In Russia, Siberian ginseng was promoted as a cheaper alternative to ginseng and was believed to have identical benefits. However, Siberian ginseng does not contain the ginsenosides that are present in the *Panax* species, which are believed to be active ingredients and have been studied scientifically.

## SCIENTIFIC EVIDENCE

### Uses

*These uses have been tested in humans or animals. Safety and effectiveness have not always been*

**Grade\***

results.	
<p><b><u>Congestive heart failure</u></b></p> <p>Evidence from a small amount of research is unclear in this area.</p>	<u>C</u>
<p><b><u>Coronary artery (heart) disease</u></b></p> <p>Several studies from China report that ginseng in combination with various other herbs may reduce symptoms of coronary artery disease. Without further evidence of the effects of ginseng specifically, a firm conclusion cannot be reached.</p>	<u>C</u>
<p><b><u>Exercise performance</u></b></p> <p>Ginseng is commonly used by athletes with the intention of improving stamina. However, it remains unclear if ginseng taken by mouth significantly affects exercise performance. Numerous studies have been published in this area, with mixed results. Better studies are necessary before a clear conclusion can be reached.</p>	<u>C</u>
<p><b><u>Fatigue</u></b></p> <p>A small amount of research using ginseng extract G115® (with or without multivitamins) reports improvements in patients with fatigue of various causes. However, these results are preliminary, and studies have not been high quality.</p>	<u>C</u>
<p><b><u>Fistula (anal)</u></b></p> <p>Preliminary evidence in infants with peri-anal abscess or fistula-in-ano suggests that a treatment of GTTC (Ginseng and Tang-kuei Ten Combination) may accelerate recovery. Further research is needed to confirm these results.</p>	<u>C</u>
<p><b><u>High blood pressure</u></b></p> <p>Preliminary research suggests that ginseng may lower blood pressure (systolic and diastolic). It is not clear what doses may be safe or effective. Well-conducted studies are needed to confirm these early results.</p>	<u>C</u>
<p><b><u>Immune system enhancement</u></b></p> <p>A small number of studies report that ginseng may stimulate activity of immune cells in the body, improve the effectiveness of antibiotics in people with acute bronchitis, and enhance the body's response to influenza vaccines. Additional studies are necessary before a clear conclusion can be reached.</p>	<u>C</u>

<p><b><u>Intracranial pressure (ICP)</u></b></p> <p>Preliminary study of Xuesaitong injection (XSTI, a preparation of <i>Panax notoginseng</i>) reports that it may help to decrease intracranial pressure and benefit coma patients. Further study is needed to confirm these results.</p>	<p><b><u>C</u></b></p>
<p><b><u>Low white blood cell counts</u></b></p> <p>Poorly described preliminary research reports improved blood counts in patients with aplastic anemia using ginseng in combination with other herbs, and improved white blood cell counts in patients with neutropenia using high doses of ginsenosides. Reliable studies are needed before a conclusion can be reached. Notably, there are reports of blood cell counts dropping after ginseng use.</p>	<p><b><u>C</u></b></p>
<p><b><u>Menopausal symptoms</u></b></p> <p>Evidence from a small amount of research is unclear in this area. Some studies report improvements in depression and sense of well-being, without changes in hormone levels.</p>	<p><b><u>C</u></b></p>
<p><b><u>Methicillin-resistant Staphylococcus aureus (MRSA)</u></b></p> <p>In patients treated with Hochu-ekki-to, which contains ginseng and several other herbs, urinary MRSA has been reported to decrease after a 10-week treatment period. Further study of ginseng alone is necessary in order to draw firm conclusions.</p>	<p><b><u>C</u></b></p>
<p><b><u>Multi-infarct dementia</u></b></p> <p>A small study conducted in patients with multi-infarct dementia reports that an herbal combination known as Fuyuan mixture, which contains ginseng, may have therapeutic benefits. The effects of ginseng alone are not clear, and no firm conclusion can be drawn.</p>	<p><b><u>C</u></b></p>
<p><b><u>Quality of life</u></b></p> <p>Preliminary research of Siberian ginseng (<i>E. senticosus</i>) administration in the elderly suggests that some aspects of mental health and social functioning (and overall health-related quality of life) may improve after four weeks of therapy, although differences appear to attenuate with continued use. Additional study is necessary in this area before a firm conclusion can be reached.</p>	<p><b><u>C</u></b></p>
<p><b><u>Sense of well-being</u></b></p> <p>Several studies have examined the effects of ginseng (with or without multivitamins) on overall well-being in healthy and ill patients when taken for up to 12 weeks. Most</p>	<p><b><u>C</u></b></p>

<p>on overall well-being in healthy and ill patients, when taken for up to 12 weeks. Most trials are not high quality, and results are mixed. However, it remains inconclusive if ginseng is beneficial in this area for anybody.</p>	
<p><b><u>Viral myocarditis</u></b></p> <p>Poorly described research in patients treated with Shenmai and Shengmai injection (a ginseng preparation), report that there may be some related cardiac improvement. More in-depth and reliable studies are needed before a clear conclusion can be drawn.</p>	<p><b><u>C</u></b></p>
<p><i>*Key to grades: A: Strong scientific evidence for this use; B: Good scientific evidence for this use; C: Unclear scientific evidence for this use; D: Fair scientific evidence against this use (it may not work); F: Strong scientific evidence against this use (it likely does not work).</i></p>	

## TRADITION/THEORY

*The below uses are based on tradition, scientific theories, or limited research. They often have not been thoroughly tested in humans, and safety and effectiveness have not always been proven. Some of these conditions are potentially serious, and should be evaluated by a qualified healthcare provider. There may be other proposed uses that are not listed below.*

- Adaptogen, adrenal tonic, aerobic fitness, aging, aggression, Alzheimer's disease, allergy, anemia, antidepressant, anti-inflammatory, antioxidant, antitumor, anxiety, aphrodisiac, aplastic anemia, appetite stimulant, asthma, atherosclerosis, attention-deficit hyperactivity disorder (ADHD), bleeding disorders, breast cancer, breast enlargement, breathing difficulty, bronchodilation, burns, chemotherapy support, chronic fatigue syndrome, cold limbs, colitis, convulsions, diabetic nephropathy (kidney disease), digestive complaints, diuretic (water pill), dizziness, dysentery, estrogen-like activity, female sexual function, fever, gynecology-related disorders, fibromyalgia, hangover, headaches, heart damage, hepatitis/hepatitis B infection, herpes, HIV, *H. pylori* infection in stomach ulcers, human lung adenocarcinoma, improved memory and thinking after menopause, influenza, insomnia, ischemic brain injury, kidney disease, learning, liver diseases, liver health, long-term debility, low sperm count, male infertility, malignant tumors, migraine, morphine tolerance, neuralgia (pain due to nerve damage or inflammation), neuroprotective, neurosis, organ prolapse, oxygen absorption, pain relief, palpitations, physical work capacity, premature ejaculation, prostate cancer, *Pseudomonas* infection in cystic fibrosis, psycho-asthenia, prostate cancer, qi-deficiency and blood-stasis syndrome in heart disease (Eastern medicine), recovery from radiation, rehabilitation, sedative, senile dementia, sexual arousal, sexual symptoms, spontaneous sweating, stomach cancer, stomach upset, stress, strokes, surgical recovery, upper respiratory tract infection, vomiting, weight loss.

## DOSING

*The below doses are based on scientific research, publications, traditional use, or expert opinion. Many herbs and supplements have not been thoroughly tested, and safety and effectiveness may not be proven. Brands may be made differently, with variable ingredients, even within the same brand. The below doses may not apply to all products. You should read product labels, and discuss doses with a qualified healthcare provider before starting*

therapy.

### Adults (18 years and older)

- Capsules containing 100-200 milligrams of a standardized ginseng extract (4% ginsenosides) taken by mouth once or twice daily has been used in studies for up to 12 weeks. 0.5 to 2 grams of dry ginseng root, taken daily by mouth in divided doses, has also been used. *E. senticosus* dry extract at a dose of 300 milligrams per day was used in a small study for eight weeks to improve quality of life in elderly patients. A proprietary ginseng root extract (Cold-FX, CV Technologies Inc., Edmonton, AB) has been studied in athletes for 28 days at a dose of 400 milligrams per day. Higher doses are sometimes given in studies or under the supervision of a qualified healthcare provider. Many different doses are used traditionally. Practitioners sometimes recommended that after using ginseng continuously for two to three weeks, people should take a break for one or two weeks, and that long-term dosing should not exceed 1 gram of dry root daily.
- A decoction of 1 to 2 grams added to 150 milliliters of water, taken by mouth daily has been used; a 1:1 (grams per milliliter) fluid extract taken as 1 to 2 milliliters by mouth daily has been used; 5 to 10 milliliters (approximately 1 to 2 teaspoons) of a 1:5 (grams per milliliter) tincture taken by mouth daily has been used. Practitioners sometimes recommended that after using ginseng continuously for two to three weeks, people should take a break for one or two weeks.

### Children (younger than 18 years)

- There is not enough scientific information available to recommend the safe use of ginseng in children.

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## SAFETY

*The U.S. Food and Drug Administration does not strictly regulate herbs and supplements. There is no guarantee of strength, purity or safety of products, and effects may vary. You should always read product labels. If you have a medical condition, or are taking other drugs, herbs, or supplements, you should speak with a qualified healthcare provider before starting a new therapy. Consult a healthcare provider immediately if you experience side effects.*

### Allergies

- People with known allergy to plants in the Araliaceae family should avoid ginseng.

### Side Effects and Warnings

- Ginseng has been well tolerated by most people in scientific studies when used at recommended doses, and serious side effects appear to be rare.
- Based on limited evidence, long-term use may be associated with skin rash or spots, itching, diarrhea, sore throat, loss of appetite, excitability, anxiety, depression, or insomnia. Less common reported side effects include headache, fever, dizziness/vertigo, blood pressure abnormalities (increases or decreases), chest pain, difficult menstruation, heart palpitations, rapid heart rate, leg swelling, nausea/vomiting, or manic episodes in people with bipolar disorder.
- Based on human research, ginseng may lower blood sugar levels. This effect may be greater in patients with diabetes than in non-diabetic individuals. Caution is advised in patients with diabetes or hypoglycemia, and in those taking drugs, herbs, or supplements that affect blood sugar. Serum glucose levels may need to be monitored by a healthcare provider, and medication adjustments may be necessary.

- There are anecdotal reports of nosebleeds and vaginal bleeding with ginseng use, although scientific study is limited in this area. There is also evidence in humans of ginseng reducing the effectiveness of the "blood thinning" medication warfarin (Coumadin®). Caution is advised in patients with bleeding disorders or taking drugs that may affect the risk of bleeding or blood clotting. Dosing adjustments may be necessary. Several cases of severe drops in white blood cell counts were reported in people using a combination product containing ginseng in the 1970s, and may have been due to contamination.
- Ginseng may have estrogen-like effects, and has been associated with reports of breast tenderness, loss of menstrual periods, vaginal bleeding after menopause, breast enlargement (reported in men), difficulty developing or maintaining an erection, or increased "sexual responsiveness." Avoid use of ginseng in patients with hormone sensitive conditions, such as breast cancer, uterine cancer, or endometriosis.
- Ginseng may produce manic symptoms, based on a case report.
- A severe life-threatening rash known as Stevens-Johnson syndrome occurred in one patient and may have been due to contaminants in a ginseng product. A case report describes liver damage (cholestatic hepatitis) after taking a combination product containing ginseng. High doses of ginseng have been associated with rare cases of temporary inflammation of blood vessels in the brain (cerebral arteritis), abnormal dilation of the pupils of the eye, confusion, or depression.
- There is preliminary evidence that ginseng may increase the QTc interval (thus increasing the risk of abnormal heart rhythms) and decrease diastolic blood pressure two hours after ingestion in healthy adults.

### **Pregnancy and Breastfeeding**

- Ginseng has been used traditionally in pregnant and breastfeeding women. Animal studies and preliminary human research suggest possible safety, although safety has not been clearly established in humans. Therefore, ginseng use cannot be recommended during pregnancy or breastfeeding. There is a report of neonatal death and the development of male characteristics in a developing baby girl after exposure of a pregnant mother to ginseng.
- Many tinctures contain high levels of alcohol and should be avoided during pregnancy.

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## **INTERACTIONS**

*Most herbs and supplements have not been thoroughly tested for interactions with other herbs, supplements, drugs, or foods. The interactions listed below are based on reports in scientific publications, laboratory experiments, or traditional use. You should always read product labels. If you have a medical condition, or are taking other drugs, herbs, or supplements, you should speak with a qualified healthcare provider before starting a new therapy.*

### **Interactions with Drugs**

- Research in humans suggests that American ginseng may reduce the anticoagulant (blood thinning) effects of warfarin (Coumadin®). In addition, based on limited animal research, and anecdotal reports of nosebleeds and vaginal bleeding in humans, ginseng may increase the risk of bleeding when taken with other drugs that increase the risk of bleeding. Examples include aspirin, anticoagulants ("blood thinners") such as heparin, anti-platelet drugs such as clopidogrel (Plavix®), and non-steroidal anti-inflammatory drugs such as ibuprofen (Motrin®, Advil®) or naproxen (Naprosyn®, Aleve®). In contrast, there is a case of the effectiveness of the "blood thinner" warfarin (Coumadin®) being reduced when taken at the same time as ginseng, with effects on levels of the blood test used to measure warfarin effects being altered

(decreased "INR").

- Based on human research, ginseng may lower blood sugar levels. This effect may be greater in patients with diabetes than in non-diabetic individuals. Caution is advised when using medications that may also lower blood sugar. Patients taking drugs for diabetes by mouth or insulin should be monitored closely by a qualified healthcare provider. Medication adjustments may be necessary.
- Headache, tremors, mania, or insomnia may occur if ginseng is combined with prescription anti-depressant drugs called monoamine oxidase inhibitors (MAOIs) such as isocarboxazid (Marplan®), phenelzine (Nardil®), and tranylcypromine (Parnate®).
- Based on case reports, ginseng may alter the effects of blood pressure or heart medications, including calcium channel blockers such as nifedipine (Procardia®). There is preliminary evidence that ginseng may increase the QTc interval (thus increasing the risk of abnormal heart rhythms) and decrease diastolic blood pressure two hours after ingestion in healthy adults. Therefore, caution is advised with other medications that may alter QTc. There is a reported case of decreased effects of the diuretic drug furosemide (Lasix®) when used with ginseng. A Chinese study reports that the effects of the cardiac glycoside drug digoxin (Lanoxin®) may be increased when used with ginseng in patients with heart failure. Do not combine ginseng with heart or blood pressure medications without first consulting a qualified healthcare provider.
- There is limited laboratory evidence that ginseng may contain estrogen-like chemicals, and may affect medications with estrogen-like or estrogen-blocking properties. This has not been well demonstrated in humans.
- In theory, ginseng may interfere with the way the body processes certain drugs using the liver's "cytochrome P450" enzyme system. As a result, the levels of these drugs may be increased in the blood and may cause increased effects or potentially serious side effects. A pharmacist should be consulted before taking and herbs or supplements.
- The analgesic effect of opioids may be inhibited by ginseng. Ginseng may interact with sedatives.
- Many tinctures contain high levels of alcohol, and may cause nausea or vomiting when taken with metronidazole (Flagyl®) or disulfiram (Antabuse®). In a preliminary study, ginseng was reported to increase the removal of alcohol from the blood, although this has not been well substantiated.

### **Interactions with Herbs and Dietary Supplements**

- Based on human research, ginseng may lower blood sugar levels. This effect may be greater in patients with diabetes than in non-diabetic individuals. Caution is advised when using herbs or supplements that may also lower blood sugar. Blood glucose levels may require monitoring, and doses may need adjustment.
- Headache, tremors, mania, and insomnia may occur if ginseng is combined with supplements that have monoamine oxidase inhibitor (MAOI) activity or that interact with MAOI drugs.
- Based on case reports, ginseng may raise or lower blood pressure. Use caution if combining ginseng with other products that can affect blood pressure.
- There is preliminary evidence that ginseng may increase the QTc interval (thus increasing the risk of abnormal heart rhythms) and decrease diastolic blood pressure two hours after ingestion in healthy adults. Therefore, caution is advised with other agents that may cause abnormal heart rhythms.

- Based on limited animal research and anecdotal reports of nosebleeds and vaginal bleeding in humans, ginseng may increase the risk of bleeding when taken with herbs and supplements that are believed to increase the risk of bleeding. Multiple cases of bleeding have been reported with the use of *Ginkgo biloba*, some cases with garlic, and fewer cases with saw palmetto. Numerous other agents may theoretically increase the risk of bleeding, although this has not been proven in most cases.
- In theory, ginseng may decrease the effects of diuretic herbs like horsetail or licorice. Ginseng may interact with sedatives.
- In theory, ginseng may interfere with the way the body processes certain herbs or supplements using the liver's "cytochrome P450" enzyme system. As a result, the levels of other herbs or supplements to be too high in the blood. It may also alter the effects that other herbs or supplements possibly have on the P450 system such as cat's claw or echinacea.
- There is limited laboratory evidence that ginseng may contain estrogen-like chemicals, and may affect agents with estrogen-like or estrogen-blocking properties. This has not been demonstrated in humans.

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#### AUTHOR INFORMATION

- This information is based on a systematic review of scientific literature edited and peer-reviewed by contributors to the Natural Standard Research Collaboration ([www.naturalstandard.com](http://www.naturalstandard.com)).

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#### REFERENCES

*Natural Standard developed the above evidence-based information based on a thorough systematic review of the available scientific articles. For comprehensive information about alternative and complementary therapies on the professional level, go to [www.naturalstandard.com](http://www.naturalstandard.com). Selected references are listed below.*

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