All About Ginseng

Ginseng is a slow-growing plant that takes at least 6 years before it is usually cultivated. In fact, the older the ginseng is, the more it can cost with people paying many thousands of dollars for ginseng roots that are decades old! Ginseng can be a rather difficult herb to get a handle on for a number of reasons. First, it’s touted to improve a variety of conditions. For example, a few common reasons people use ginseng are to improve energy levels, enhance sexual performance, reduce stress and to ward off disease. Another reason, which adds to the confusion surrounding this herb, is that different types of ginseng are available to consumers and each type goes by different names. Thus, picking up a bottle of “ginseng” may not give you the product—or results—you’re looking for.

Types of Ginseng

While there are many different species of ginseng, three types are most popular. They are American ginseng, Asian ginseng and Siberian ginseng. All three belong to the same family of plant (Araliaceae); however, Siberian ginseng is kind of a kissing cousin to the other two because it belongs to a different genus. Below is an overview of the three popular ginseng types and some of their alternative names.

<table>
<thead>
<tr>
<th>Ginseng Type</th>
<th>Also Known As</th>
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<tbody>
<tr>
<td>American Ginseng</td>
<td>Panax quinquefolius, Canadian ginseng, occidental ginseng</td>
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<tr>
<td>Asian Ginseng</td>
<td>Panax ginseng, Korean ginseng, white ginseng</td>
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<tr>
<td>Siberian Ginseng</td>
<td>Eleutherococcus senticosus, eleuthero ginseng, ciwujia, eleuthero ginseng</td>
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Because different types of ginseng are available to consumers, let’s review each individually to determine which might be right for you.

American Ginseng

The scientific name for American ginseng is *Panax quinquefolius*, a plant that grows in both America and Canada. Traditionally, American ginseng is used for a number of reasons such as improving exercise ability, promoting general health, improving sex drive and reducing stress. While American ginseng contains many different ingredients, the active parts are thought to reside in the root of the plant and are a family of related compounds called ginsenosides. Ginsenosides are part of a larger family of compounds called saponins. So, you may see the words ginsenosides and saponins used interchangeably when researching ginseng.
What Are Adaptogens?

You can't get far into researching ginseng before you run into the word *adaptogen*, so it's best if we define it here. An adaptogen is a generic term for something that helps people cope with (in other words, adapt to) a stress. The stress can be anything such as physical stress (like exercise), emotional stress, pollution, cold temperatures, etc. Essentially, adaptogens are said to change the way they work according to what your needs are. Some feel that ginseng works by acting like an adaptogen in the body. It is important to remember that the term adaptogen does not refer to any specific molecule but rather was created to help explain the different effects that have been observed by users of ginseng. In other words, just like Bigfoot, nobody is sure if adaptogens actually exist.

American Ginseng and Exercise

Because exercise is a type of stress, some may use ginseng in the hopes that it will help improve their physical performance in the gym. While this might sound logical, the role of ginseng improving any aspect of exercise performance is controversial and open to speculation. Some clinical studies have found no exercise benefit following ginseng use. Others have also criticized the overall quality of studies that find positive outcomes. For example, evidence supporting the use of American ginseng may inadvertently be derived from studies of Asian ginseng. Both American and Asian versions of ginseng may appear with the prefix *panax*. While both plants are related, it is possible that they differ not only in the total amount of ginsenosides present but also in levels of the different types of ginsenosides that are known to exist.

American Ginseng and Nitric Oxide

Nitric oxide (NO) is a gas produced in the body that expands blood vessels and can lower blood pressure. Preliminary research does suggest that American ginseng may augment nitric oxide production. As such, American ginseng may play a role in blood pressure reduction and indeed some research exists in support of this. Nitric oxide-boosting supplements may also be popular among strength training enthusiasts who seek fuller, more *pumped*, muscles. However, in all of these cases, the majority of evidence in support of ginseng is not based on concrete evidence. The bottom line is that more research is needed before ginseng’s role in nitric oxide production is firmly tied to the reduction or improvement of any condition.
Ginseng and Cancer Prevention

Some may use ginseng in the hopes that it might help reduce cancer risk. Indeed, some evidence suggests that this practice be warranted.\textsuperscript{583,584} Most of the evidence to date on this topic is derived from asking large numbers of people questions about their lifestyle practices. Those consuming ginseng report less cancer. While encouraging, it could be that ginseng users might have had other healthy habits (i.e. didn’t smoke, ate more vegetables, etc.) that contributed to their reduction in cancer. It should also be remembered that this benefit appears strongest for Asian ginseng rather than the other types. The effect of ginseng in those who currently have cancer is unknown. Some speculate that ginseng might interact with some forms of cancer, so it might be wise to steer clear of this herb until more is known. The bottom line of all of this is that for the moment, ginseng and cancer prevention is an open question, but one that is surely worthy of more study.

American Ginseng and Diabetes

Several studies have found that American ginseng may lower blood sugar levels in some individuals who have type II diabetes.\textsuperscript{572,574,575} Other research suggests that American ginseng may also lower blood sugar levels in people without diabetes.\textsuperscript{572,573,576} While more research is needed, dosages of between 1-3 grams have been used to achieve this effect.

Side Effects and Concerns

In healthy people, American ginseng is usually found to be safe. One group who should steer clear of American ginseng is pregnant women, where animal research suggests it may be linked to birth defects.\textsuperscript{581} People who use blood thinner medications should consult their physician before supplementing with American ginseng. American ginseng may decrease the effects of blood thinners.\textsuperscript{582} Likewise, those with bleeding disorders should also exercise caution with ginseng.

In the test tube, American ginseng seems to promote the growth of cancers that are sensitive to the hormone estrogen.\textsuperscript{397} This may be tied to ginseng’s apparent estrogen-like effects. Until more is known, women with a history of breast, uterine or ovarian cancers should avoid American ginseng.

American ginseng may lower blood sugar levels.\textsuperscript{572} Because of this, people with diabetes should monitor their blood sugar regularly if they supplement with ginseng.
Asian Ginseng

Asian Ginseng and Exercise
The scientific name for Asian ginseng is Panax ginseng. Like all types of ginseng, Asian ginseng is sometimes advertised to improve physical endurance and strength during exercise. However, several studies have been unable to substantiate this claim. Likewise, Asian ginseng does not seem to elevate testosterone or growth hormone levels even in young men who participate in strenuous strength training programs. Asian ginseng also seems unable to prevent cortisol from rising after exercise. Cortisol, a hormone which has many different effects in the body is criticized in some fitness circles because of thoughts that it limits muscle growth. Asian ginseng neither appears to hinder muscle growth or facilitate it based upon the limited research currently available.

Asian Ginseng and Energy Levels
It seems that these days people are on the go from the moment they wake up until the time their head hits the pillow. Thus, one of the most popular reasons people use Asian ginseng is to boost energy levels to help them get through their hectic days. Unfortunately, there isn’t much evidence that ginseng supplements enhance energy levels. Sometimes ginseng is combined with caffeine or other ingredients. This may explain why some say they have more energy after using ginseng.

Asian Ginseng and Brain Function
Studies show that even a single dose of Asian ginseng can affect brainwave activity. Other research finds that Asian ginseng may enhance creativity and the speed at which we do simple arithmetic tasks. Thus far, ginseng has not yet been found effective at improving memory.

Asian Ginseng and Sexual Performance
Asian ginseng may be listed as an ingredient in some supplements touted to improve male sexual performance. This may be based on research finding that 900 mg used three times a day might help enhance performance in men with erectile dysfunction. Whether ginseng also is effective in those without erectile problems is open to speculation.

What is Red and White Ginseng?
The terms red and white ginseng refer to how the ginseng was prepared. Ginseng root is naturally white in appearance. When the root is steamed, the color of the root turns red and it is called red ginseng. When the root is simply air-dried and doesn’t receive any further processing, it retains its natural color it is called white ginseng. Both red and white ginseng contain different levels of ginsenosides—the compounds many think are some of the herb’s active ingredients.
Asian Ginseng and Menopause
Some women may use Asian ginseng as a natural alternative to hormone replacement therapy because of speculation that it acts similarly to the hormone estrogen and as such might help them cope with hot flashes and other symptoms of menopause. Currently, the ginseng-estrogen connection is controversial. In other words, there is evidence that it has estrogen-like properties and evidence that it doesn’t. Regardless of how it works, the research so far tends to show that while Asian ginseng may not reduce hot flashes, it may help alleviate depression and fatigue levels which sometimes accompany menopause.\textsuperscript{596,597} Little research exists on how much would be best to use for this purpose.

Asian Ginseng and Cancer
In studies performed in test tubes, Asian ginseng is found to possess anti-cancer characteristics.\textsuperscript{598,599} Specifically, Asian ginseng seems to prevent damage to genetic material, which might make us more susceptible to cancer.\textsuperscript{598} Studies of large populations of people also hint that those who consume the most Asian ginseng tend to get fewer cancers of the liver, lung, stomach and ovary.\textsuperscript{600,602} As a rule, people who use supplements tend to also have other healthy habits, such as not smoking, getting more exercise, etc. Thus, one possible drawback to observing the habits of large populations of people is that the effect of ginseng may be caused by either ginseng itself or the combination of ginseng with other healthy habits. The bottom line is that more research is needed before anyone can say if Asian ginseng prevents cancer.

Asian Ginseng and Radiation Protection?
Preliminary laboratory studies suggest that Panax ginseng may offer some protection against the effects of radiation.\textsuperscript{626} Thus, Panax ginseng may be incorporated into cosmetics to protect the skin from sun exposure as well as supplements marketed to people hoping to reduce radiation-injury following national emergencies. How ginseng appears to protect people from radiation has not been well studied. One caveat to this might be that ginseng supplements may be counterproductive in those who are receiving radiation treatment for cancer. In other words, might ginseng reduce the effectiveness of radiation therapy? Nobody knows. Those who receive radiation therapy should consult their oncologist before using ginseng.

Side Effects and Concerns
Like ginseng in general, Asian ginseng is usually free of significant side effects in healthy people. A few points to consider when using Asian ginseng are as follows:

In theory, Asian ginseng may lower blood sugar levels. Diabetics should monitor blood sugar levels closely when using Asian ginseng.

Asian ginseng seems to lower blood pressure in laboratory animals.\textsuperscript{603} Because of this, Asian ginseng might alter blood pressure in humans.
In theory, Asian ginseng might interact with blood thinner medications. People with heart problems of any kind should talk to their physician before using ginseng.

The idea that ginseng acts like the hormone estrogen is a matter of debate with evidence on both sides of the argument. Some studies suggest that ginseng may latch onto the estrogen receptors on breast cancer cells. In theory, this might not be good for the person who has breast cancer. To be on the safe side, those with personal or family histories of breast and ovary cancer should steer clear of ginseng until more is known.

**Siberian Ginseng**

Siberian ginseng, which grows in Russia, China, Korea and Japan is not always considered “true” ginseng because it belongs to a different genus of plants than its relatives—Asian and American ginseng. Siberian ginseng is easily distinguished from its cousins by its scientific name, *Eleutherococcus senticosus*, which, in turn, gives rise to other frequently used names such as *eleuthero ginseng* or simply *eleuthero* for short. Another name for Siberian ginseng that is popular in some circles is *ciwujia* (pronounced su-wa-ja). Like that of Asian and American ginseng, the roots of Siberian ginseng appear to be the source of its active ingredients. The active ingredients of Siberian ginseng are thought to be a variety of compounds collectively called *eleutherosides*. Different types of eleutherosides are believed to elicit different effects in the body. Siberian ginseng may also contain other compounds, which may exert influence in the body as well. Much of the research on Siberian ginseng was done in the former Soviet Union where a cheaper, faster-growing, yet equally effective alternative to Panax ginseng was desired for Soviet athletes. Therefore, one of the big reasons people use Siberian ginseng is to improve exercise performance. Other claims for Siberian ginseng range from improving overall energy levels, decreasing mental stress and stimulating the immune system. Like other ginseng types, Siberian ginseng is also thought to be an adaptogen, changing the way it works according to the type of stress you are under.

**Siberian Ginseng and Exercise**

Because of research, mostly conducted in the former Soviet Union, some may opt to supplement with Siberian ginseng to improve aerobic and muscle endurance during exercise. In fact, Siberian ginseng may be an ingredient of supplements marketed to runners, cyclists and other aerobic endurance athletes because of research finding that it may improve both strength and endurance in humans. Recently, the quality of these early Siberian ginseng studies have come under fire by others. Adding to the controversy are the conclusions of other studies which fail to show that Siberian ginseng improves exercise performance in humans. So, for the moment, it is unknown how much—if any—improvement in exercise capacity might be elicited from Siberian ginseng use.
The Ginseng-Cortisol Connection?

Since ginseng is said to decrease stress, and because exercise is a type of stress, some athletes may include ginseng in their daily supplement regimen. Preliminary evidence suggests that Siberian ginseng, when given at a dosage of 4 grams per day might increase cortisol levels in aerobic-endurance athletes. Cortisol is a stress-related hormone, which in small amounts is needed for the proper functioning of the body. However, in theory, high levels of cortisol might decrease exercise performance, especially in highly trained athletes. Interestingly, Asian ginseng has not been observed to increase cortisol (or testosterone) when given to strength trainers in dosages of 20 grams a day. Arguably, the ginseng-cortisol connection deserves further research before anyone can say one way or another what is going on. For the moment, if you are going to use Siberian ginseng, do so in moderation—especially if you’re a highly-trained athlete.

Siberian Ginseng and Memory

There is preliminary evidence that Siberian ginseng may improve short-term memory in healthy persons. Whether or not this means college students using Siberian ginseng will perform better on mid-terms is unknown.

Siberian Ginseng and the Immune System

People who have colds and flus may use Siberian ginseng because of preliminary evidence suggesting that it might stimulate some aspects of the immune system. For example, research finds that Siberian ginseng may alter mast cells which play a role in allergies. On the other hand, not all research is positive for Siberian ginseng with some research finding no effect on the immune system. At this point there is no compelling evidence that Siberian ginseng (or any ginseng for that matter) can prevent colds or flus.

Siberian Ginseng and Heart Disease

Some people may use Siberian ginseng to reduce or prevent heart disease. One of the components in Siberian ginseng is beta sitosterol, a plant steroid which has been shown to lower cholesterol levels as well as LDL (“bad” cholesterol). It remains to be seen whether the lowering of cholesterol also results in a reduction in heart disease (food for thought: the same can be said for some cholesterol-lowering medications). For those investigating beta sitosterol itself, research finds that about 800 mg a day in conjunction with a low fat diet may be needed before cholesterol levels begin to decrease.
What About Standardized Ginseng?

In an effort to offer consumers a greater level of certainty as to what they are purchasing, some ginseng products are standardized—in other words, guaranteed to contain a specific amount of a product’s active ingredients. A few issues should be considered when choosing standardized products. One. Ginseng—like many herbal products—contains many different compounds. In many cases we simply do not know which is the active ingredient, or ingredients. Two. Concentrating one or a few ingredients may alter any positive effects the herb might have. Three. Unfortunately, random tests of supplements continue to find that the amount listed on the label may differ from what the product actually contains. In one study, the actual eleutheroside content of Siberian ginseng was found to vary by as much as 200 percent from that listed on the label. Standardized or not. There is still no better option for the consumer than to deal only with reputable companies.

Side Effects and Concerns

Like all types of ginseng, short-term use of Siberian ginseng appears to be safe, with few side effects in healthy people. It is worth mentioning that the German E Commission, which is somewhat analogous to the FDA in America and which performs tests on herbs, recommends that Siberian ginseng not be used for more than 3 months at a time to limit side effects.

One commonly reported effect is sleepiness, which is why some use Siberian ginseng to help insomnia. Siberian ginseng should not be combined with sedative medications.

Diabetics should monitor their blood sugar closely because of some evidence that Siberian ginseng may lower blood sugar.

People who use blood thinner medications should consult their physician before using Siberian ginseng because of some older evidence that the two may over-thin the blood.

Very preliminary evidence suggests that Siberian ginseng may elevate levels of digoxin, a medication used by some who have heart disease.

My Thoughts

Like the legends of ginseng itself where it is said to act in a variety of ways under different conditions, the investigations of this herb are also somewhat contradictory, with studies showing it works and other studies finding that it doesn’t. These discrepancies could be due to a number of factors. So, for the moment until more is known, ginseng remains a mystery. However, this does not mean all hope is lost. If you are a person looking for something that will help you cope with stress better, give you more energy, battle colds and flus, help you sleep better, reduce your risk of diabetes, cancer and a host of other diseases as well as improve the overall quality of your life, I do have an answer for you. It’s not ginseng. It’s a little supplement I like to call
Exercise. I’m not kidding! Let’s look at the claims for ginseng and stack them up against the benefits that occur when you take part in a regular exercise program.

<table>
<thead>
<tr>
<th>Ginseng vs. Exercise: How They Compare</th>
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<tr>
<td><strong>Claim</strong></td>
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<tr>
<td>• Improves energy levels</td>
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<tr>
<td>• Lowers blood sugar</td>
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<tr>
<td>• Raises testosterone</td>
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<tr>
<td>• Improves immune function</td>
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<tr>
<td>• Prevents cancer</td>
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<tr>
<td>• Lowers blood pressure</td>
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<td>• Improves mood</td>
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<td>• Improves strength</td>
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<td>• Improves exercise endurance</td>
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<tr>
<td>• Improves sleep</td>
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<tr>
<td>• Improves sexual performance</td>
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<tr>
<td>• Improves quality of life</td>
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And, as an added bonus, there are fewer side effects with exercise!

Can ginseng have positive effects in the body? Yes, I think it can, but I also think we need to do more research to better figure out what those effects are and the right types and amounts of ginseng to use. Until that day arrives, you have the opportunity right now to achieve most, if not all, of the alleged benefits of ginseng by simply going for a brisk walk 3 or 4 times a week. So, what are you waiting for...?

**About the Author**

Joe Cannon, MS, CSCS, NSCA-CPT is a self-employed personal trainer, blogger and the author of several books. He holds an MS degree in Exercise Science and a BS degree in Chemistry and Biology. He lectures and writes extensively about personal training, dietary supplements and sports nutrition. To learn more, see Joe’s website [www.Joe-Cannon.com](http://www.Joe-Cannon.com).

**References**


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