



AMERICAN
BOTANICAL
COUNCIL

[Advanced Search](#)

ABC Resources

[HerbalGram](#)

[HerbClip](#)

[HerbMedPro](#)

[Monographs](#)

[Commission E](#)

[Expanded E](#)

[ABC Guide](#)

[Healthy Ingredients](#)

[HerbalEGram](#)

[Virtual Garden](#)

[E-Cards](#)

Get Involved

[Join/Renew](#)

[Donate](#)

[Adopt-an-Herb](#)

[Volunteer](#)

[Calendar](#)

[Press Kit](#)

[Facebook](#)

[Twitter](#)

[Youtube](#)

Register for eNewsletter

[Join/Renew](#) | [Login](#)

[News](#) | [Herbal Library](#)

[Programs & Services](#)

[Support ABC](#)

[Related Links](#)

[Shop](#) | [About Us](#)

[Members](#)

Herbal Medicine

[Return to index](#)

Ginseng root

Latin Name: *Panax ginseng*

Pharmacopeial Name: Ginseng radix

Other Names: Asian Ginseng, Chinese ginseng, Korean ginseng, true ginseng

- [Overview](#)
- [Description](#)
- [Chemistry and Pharmacology](#)
- [Uses](#)
- [Contraindications](#)
- [Side Effects](#)
- [Use During Pregnancy and Lactation](#)
- [Interactions with Other Drugs](#)
- [Dosage and Administration](#)
- [References](#)
- [Additional Resources](#)

Overview

Ginseng is a slow-growing perennial herb native to the mountain forests of northeastern China, Korea, and the far eastern regions of the Russian Federation. In China, the natural range for ginseng extends from Hebei Province to the three northeastern provinces of Liaoning, Jilin, and Heilongjiang. It is cultivated extensively in China, Japan, Korea, and Russia. The Changbai mountain range is reportedly the only area in China where wild ginseng still occurs naturally (Bone, 1998; Foster and Chongxi, 1992; Leung and Foster, 1996; Melisch et al., 1997; Wichtl and Bisset, 1994). It usually starts flowering at its fourth year and the roots take four to six years to reach maturity. "White" ginseng root (unprocessed) is sometimes bleached and then dried and "red" ginseng is prepared from white ginseng by various processing methods, such as steaming the fresh root before drying. There are many types and grades of ginseng, depending on the origin, root maturity, parts of the root used, and methods of raw material preparation or processing (Bradley, 1992; Foster and Chongxi, 1992; Leung and Foster, 1996). In Russia, *Panax ginseng* comes mostly from cultivation and partly from permitted or illegal harvest in the wild. Wild ginseng is listed under protected status in the *Russian Red Data Book* and, therefore, its harvest and trade is prohibited under Russian law. Under China's nationally protected species schedule, ginseng is subject to the Protection Category 1, comparable to its status in the Russian Federation (Melisch et al., 1997). In China, North and South Korea, and Japan, *P. ginseng* comes from cultivated sources (Yen, 1992).

Ginseng's genus name *Panax* is derived from the Greek *pan* (all) *akos* (cure), meaning cure-all. The transliteration of the word *gin* (man) *sen*g (essence) is derived from the Chinese ideogram for "crystallization of the essence of the earth in the form of a man" (Foster, 1991; Hu, 1976). Ginseng's therapeutic uses were recorded in the oldest comprehensive materia medica, *Shen Nong Ben Cao Jing*, written around two thousand years ago. In Asian medicine, dried ginseng is used as a tonic to revitalize and replenish vital energy (*qi*). The usual effect of replenishing *qi* is not to give an energy boost like that of caffeine or amphetamine (Dharmananda, 1999). It is traditionally used as an aid during convalescence and as a prophylactic to build resistance, reduce susceptibility to illness, and promote health and longevity. Its activity appears to be based on whole body effects, rather than particular organs or systems, which lends support to the traditional view that ginseng is a tonic that can revitalize the functioning of the organism as a whole. There is no equivalent concept or treatment in Western conventional medicine. However, multivitamins are used in a similar manner. In traditional Chinese medicine it is usually prescribed in combination with other herbs and taken in an aqueous decoction dosage form (Bone, 1998; Foster and Chongxi, 1992; Leung and Foster, 1996; Wichtl and Bisset, 1994). Today, ginseng is official in the national pharmacopeias of Austria, China, France, Germany, Japan, Switzerland, and Russia (Bradley, 1992; DAB 10, 1994; JP XII, 1993; AB, 1981; Ph. Fr. X, 1990; Ph. Helv. VII, 1987; Tu, 1992; USSR X, 1973; Wichtl and Bisset, 1994). The *Pharmacopoeia of the People's Republic of China* indicates its use for prostration with impending collapse marked by cold limbs and faint pulse; diminished function of the spleen with loss of appetite; diabetes caused by "internal heat"; general weakness with irritability and insomnia in chronic diseases; impotence or frigidity; and heart failure and cardiogenic shock (Tu, 1992). [It should be noted that in traditional Chinese medicine, the term "spleen" does not correlate to the western anatomical definition of spleen but rather to the entire digestive system, with regard to its functions of digestion, transport and distribution of nutrients, blood flow, and reinforcement of vital energy (*qi*). "Diabetes caused by internal heat" is a specific condition with symptoms including excessive thirst and urination, and sometimes accompanied by excessive eating (Tu, 1992; Yen, 1992).]

In Germany, ginseng is one of a few economically important herbal drugs listed separately in the Foreign Trade Statistics. In 1992, Germany imported 174.6 tons, mainly from China and Hong Kong. A considerable amount of the roots are value-added in Germany and then exported mostly to France, Italy,

and Argentina (Lange and Schippmann, 1997). Ginseng is official in the *German Pharmacopoeia*, approved in the Commission E monographs, and used in geriatric remedies, roborants (invigorating and strengthening medicines), and tonic preparations. The Commission E specifies powdered root or tea infusions (BANZ, 1998; Bradley, 1992; DAB 10, 1994; Meyer-Buchtela, 1999; Wichtl and Bisset, 1994). In the United States, it is used by itself and as a main ingredient in a wide range of tonic, energy, and immunostimulant dietary supplements. It is also used extensively in traditional Chinese medicine herbal teas and other fluid or solid forms prescribed to patients by licensed acupuncturists and naturopathic physicians.

During the past fifty years, numerous scientific studies of varying quality have been published on ginseng (Foster and Chongxi, 1992). Modern human studies have investigated its preventive effect on several kinds of cancer (Yun et al., 1993; Yun and Choi, 1995, 1998), its effect on newly diagnosed non-insulin-dependent diabetes mellitus patients (Sotaniemi et al., 1995), its long-term immunological effect on HIV patients (Cho et al., 1994; Cho et al., 1997; Sankary, 1989), its ability to treat "qi-deficiency" and blood-stasis syndrome of coronary heart disease and angina pectoris (Jiang et al., 1992), its ability to treat hepatotoxin-induced liver disease in the elderly (Zuin et al., 1987), its effect on cell-mediated immune functions in healthy volunteers (Scaglione et al., 1990), its ability to induce a higher immune response in vaccination against influenza (Scaglione et al., 1996), its effect on blood pressure in patients with hypertension (Han et al., 1998), its effect on alveolar macrophages from patients suffering with chronic bronchitis (Scaglione et al., 1994), its ability to treat severe chronic respiratory diseases (Gross et al., 1995), its use in the treatment of functional fatigue (Le Gal et al., 1996), its ability to improve quality-of-life in persons subjected to high stress (Caso Marasco et al., 1996), its effect on psychomotor performance in healthy volunteers (D'Angelo et al., 1986), its effect on physical performance during exercise (Pieralisi et al., 1991), its ability to treat erectile dysfunction (Choi et al., 1995), and its ability to treat male infertility (Salvati et al., 1996).

Some clinical trials have suggested the use of ginseng for fatigue and the improvement of physical and mental performance (Dorling and Kirchdorfer, 1980; Forgo et al., 1981). Ginseng has been studied for treatment of cerebrovascular insufficiency (Quiroga and Imbriano, 1979; Quiroga, 1982), psychophysical asthenia and depressive symptoms (Rosenfeld, 1989), immunomodulation (Scaglione et al., 1990; Scaglione et al., 1996). Trials have also reported favorable results in treating post-menopausal symptoms (Reinold, 1990) and improving athletic performance (Forgo and Kirchdorfer, 1981, 1982). A review in a popular newsletter has raised questions regarding the design and results of some of these studies (Schardt, 1999). Several recent trials have reported negative results for improvement of performance during aerobic exercise (Allen et al., 1998; Morris et al., 1996; Engels and Wirth, 1997; Cherdungsi et al., 1995) and in the secondary treatment of geriatric patients (Thommessen and Laake, 1996).

Many of the clinical studies published in the scientific literature have been conducted on a proprietary extract of *P. ginseng* standardized to 4% total ginsenosides (G115[®], Ginsana[®], Pharmaton, Lugano, Switzerland). There have been four studies conducted on G115 to measure the effect of ginseng on endurance and vitality (Dorling and Kirchdorfer, 1980; Forgo et al., 1981; Gross et al., 1995; Sandberg, 1980). Three studies have been conducted on psychoasthenia (Mulz et al., 1990; Rosenfeld, 1989; Gianoli and Riebenfeld, 1984). Ten clinical trials have attempted to determine if ginseng affects physical stress and psychomotor functions (Forgo and Kirchdorfer, 1981; Forgo and Kirchdorfer, 1982; Forgo, 1983; Forgo and Schimert, 1985; Van Schepdael, 1993; Pujol et al., 1996; Engels and Wirth, 1997; Engels et al., 1996; Collomp et al., 1996; D'Angelo et al., 1986). Two clinical trials have investigated cerebral blood flow deficits (Quiroga and Imbriano, 1979; Quiroga, 1982). Two studies on pharmacodynamics measured the immunomodulatory effects (Scaglione et al., 1990; Scaglione et al., 1994), oxygen uptake (von Ardenne and Klemm, 1987), doping substances in urine (Mulz and Degenring, 1989; Forgo, 1980), and serum glucose, serum cholesterol, and serum triglyceride levels (Cheah, 1994).

One double-blind placebo-controlled study investigated the effect of ginseng on newly diagnosed non-insulin-dependent diabetes mellitus (NIDDM) patients (Sotaniemi et al., 1995). Thirty-six NIDDM patients (20 women and 16 men) were recruited in five health centers and were treated for eight weeks. Patients were randomized to ingest one tablet daily containing 0 (placebo), 100, or 200 mg ginseng, presumably an extract, but the authors did not state the type of preparation used in the study (manufactured by Dansk Droge, Copenhagen). Effects on psychophysical tests, measurements of glucose balance, serum lipids, aminoterminalpropeptide (PIINP) concentration, and body weight were tested. Ginseng therapy elevated mood, improved psychophysical performance, and reduced fasting blood glucose (FBG) and body weight. The 200 mg dose of ginseng improved glycated hemoglobin, serum PIINP, and physical activity. The authors concluded that ginseng may be a useful therapeutic adjunct in the management of NIDDM, but because the active material was not adequately identified, it is difficult to draw meaningful conclusions from this study.

To test for possible anticancer effects, one case-controlled study, conducted at the Laboratory of Experimental Pathology at the Korea Cancer Center Hospital with 1,987 pairs of subjects, investigated the preventive effect of ginseng intake against various human cancers (Yun and Choi, 1995). In this study, those participants ingesting ginseng had a decreased risk for cancer compared with non-users. A decrease in risk with increased frequency and duration of ginseng ingestion was reported, showing a dose-response relationship. The preventive effect was reported with the ingestion of fresh undried root extract, white dried root extract, powdered white dried root, and red steamed root. Other ginseng dosage forms tested in this study did not show a decrease in cancer risk including fresh sliced root, fresh root juice, and white root tea. The authors concluded that their findings support the view that patients who take ginseng have a decreased risk for most cancers compared with those who do not.

In a subsequent prospective study the non-organ specific cancer preventive effects of ginseng were investigated in 4,634 people over 40 years old, residing in ginseng production areas, from August, 1987 to December, 1992 (Yun and Choi, 1998). Among ginseng preparations, fresh ginseng extract consumers were associated with a significantly decreased risk of gastric cancer. The authors concluded that their results strongly suggest that ginseng has a non-organ specific preventive effect against cancer, providing support for the previous case-control studies.

The approved modern therapeutic applications for ginseng appear to be generally supportable based on its

history of use in well established systems of traditional medicine, extensive phytochemical investigations, pharmacological studies in animals, and human clinical studies. However, recent studies do not support results from earlier research. The World Health Organization (WHO) has issued a monograph reviewing standards and therapeutics of Asian ginseng, concluding that some general uses are warranted by clinical data (see Uses below) (WHO, 1999).

Chinese and Japanese pharmacopeial grade ginseng must be composed of the dried mature root, collected in autumn, from which the rootlets have been removed. Botanical identity must be confirmed by thin-layer chromatography (TLC) as well as by macroscopic and microscopic examinations and organoleptic evaluation. It must contain not less than 14% dilute ethanol-soluble extractive, among other quantitative purity standards (JP XII, 1993; Tu, 1992). The *British Herbal Pharmacopoeia* requirements are comparable to the Asian monographs with some exceptions, including not less than 20% ethanol-soluble extractive (70%), calculated with reference to the oven-dried material (BHP, 1996). The *German Pharmacopoeia* requires not less than 1.5% total ginsenosides calculated as ginsenoside Rg₁, botanical identification by TLC, macroscopic and microscopic examination, organoleptic evaluation, and some quantitative purity standards (DAB 10, 1994). The *Swiss Pharmacopoeia* requires not less than 2% total ginsenosides calculated as ginsenoside Rg₁ (Ph.Helv.VII, 1987).

Description

Ginseng root consists of the dried main and lateral root and root hairs of *P. ginseng* C.A. Meyer [Fam. Araliaceae] and their preparations in effective dosage. The root contains at least 1.5% ginsenosides, calculated as ginsenoside Rg₁.

Chemistry and Pharmacology

The biologically active constituents in *P. ginseng* are a complex mixture of triterpene saponins known as ginsenosides (Lewis, 1986; Ng and Yeung, 1986; Liu and Xiao, 1992). The root contains 2–3% ginsenosides of which Rg₁, Rc, Rd, Rb₁, Rb₂, and Rb₀ are quantitatively the most important.

At least 30 ginsenosides have been isolated and characterized (Ng and Yeung, 1986). The pharmacological actions of individual ginsenosides may work in opposition. For example, the two main ginsenosides, Rb₁ and Rg₁, respectively suppress and stimulate the central nervous system (Chong and Oberholzer, 1988). These opposing actions may contribute to the "adaptogenic" description of ginseng and its purported ability to balance bodily functions. Ginseng's pharmacological activities may be multiple and complex, due not only to ginsenosides but to a variety of compounds such as panacene (a peptidoglycan), which has exhibited hypoglycemic activity (Konno et al., 1984), a peptide with insulinomimetic properties (Ando et al., 1980), and salicylate and vanillic acid, which showed antioxidant and antifatigue effects in animals (Han et al., 1983).

The Commission E reported that in various stress models such as immobilization test and coldness test, the resistance of rodents was enhanced. Ginseng is reported to possess hormone-like and cholesterol-lowering effects, promote vasodilatation, and act as an anxiolytic and antidepressant (Choi et al., 1995; Chong and Oberholzer, 1988). Many studies on animals have found ginseng extracts and ginsenosides to be effective in stimulating learning, memory, and physical capabilities (Petkov and Mosharraf, 1987), supporting radioprotection (Takeda et al., 1981; Takeda et al., 1982), providing resistance to infection (Singh et al., 1984), demonstrating antioxidant and antifatigue effects (Han et al., 1983; Saito et al., 1974), enhancing energy metabolism (Avakian et al., 1984), and reducing plasma total cholesterol and triglycerides while elevating HDL levels (Yamamoto et al., 1983). A recent study at Yale University has suggested that ginseng's vasodilatory action may be due to nitric oxide synthesis (Gillis, 1997).

Uses

The Commission E approved ginseng as a tonic for invigoration and fortification in times of fatigue and debility or declining capacity for work and concentration. Ginseng was also approved for use during convalescence.

The World Health Organization (WHO) monograph section on 'uses supported by clinical data' re-affirms the Commission E approved uses: 'used as a prophylactic and restorative agent for enhancement of mental and physical capacities, in cases of weakness, exhaustion, tiredness, and loss of concentration, and during convalescence' (WHO, 1999).

Contraindications

Hypertension (Bradley, 1992).

Side Effects

None known.

Use During Pregnancy and Lactation

The Commission E reports no known restrictions on the use of ginseng during pregnancy and lactation. Although the *British Herbal Compendium* contraindicates ginseng during pregnancy, this is not substantiated by use in Asia or by the Commission E (McGuffin et al., 1997). However, controlled, long-term safety studies have not been conducted. WHO has also reiterated that the safety of ginseng use during pregnancy has not been established, although it noted that ginseng is not teratogenic (WHO, 1999).

Interactions with Other Drugs

The *British Herbal Compendium* contraindicates the use of ginseng with stimulants, including excessive use of caffeine (Bradley, 1992). The WHO monograph cites two cases of ginseng interaction with phenelzine, a monoamine oxidase inhibitor, although the clinical significance of this interaction was yet to be determined (WHO, 1999).

Dosage and Administration

Unless otherwise prescribed: 1-2 g of root per day for up to three months; a repeated course is feasible.

Decoction: 1-2 g in 150 ml of water.

Fluidextract 1:1 (g/ml): 1-2 ml.

Tincture 1:5 (g/ml): 5-10 ml.

Standardized extract (4% total ginsenosides): 100 mg twice daily.

References

- Allen, J.D. J. McLung, A.G. Nelson, M. Welsch. 1998. Ginseng supplementation does not enhance healthy young adults' peak aerobic exercise performance. *J Am Coll Nutr* 17(5):462466.
- Ando, T., T. Muraoka, N. Yamasaki, H. Okuda. 1980. Preparation of anti-lipolytic substance from *Panax ginseng*. *Planta Med* 38(1):1823.
- Avakian, E.V., R.B. Sugimoto, S. Taguchi, S.M. Horvath. 1984. Effect of *Panax ginseng* extract on energy metabolism during exercise in rats. *Planta Med* 50(2):151154.
- BAnz. See *Bundesanzeiger*.
- Bradley, P.R. (ed.). 1992. *British Herbal Compendium*, Vol. 1. Bournemouth: British Herbal Medicine Association.
- British Herbal Pharmacopoeia* (BHP). 1996. Exeter, U.K.: British Herbal Medicine Association.
- Bone, K. 1998. GinsengThe Regal Herb. *MediHerb Professional Review* (1):62:14; (2):63:14; (3):64:14.
- Bundesanzeiger* (BAnz). 1998. Monographien der Kommission E (Zulassungs- und Aufbereitungskommission am BGA f r den humanmed. Bereich, phytotherapeutische Therapierichtung und Stoffgruppe). Kln: Bundesgesundheitsamt (BGA).
- Caso Marasco, A., R. Vargas Ruiz, A. Salas Villagomez, C. Begoa Infante. 1996. Double-blind study of a multivitamin complex supplemented with ginseng extract. *Drugs Exp Clin Res* 22(6):323329.
- Cheah, J.S. 1994. Ginsana G115 versus placebo in patients with non-insulin dependent diabetes. Pharmaton in-house file.
- Cherdrungsi, P. et al. 1995. Effects of a standardized ginseng extract and exercise training on aerobic and anaerobic exercise capacities in humans. *Korean J Ginseng Sci* 19:93100.
- Cho, Y.K. et al. 1994. The effect of red ginseng and Zidovudine on HIV patients. *Int Conf AIDS* 10(1):215. (Abstract No. PB0289).
- Cho, Y.K., H.J. Lee, W.I. Oh, Y.K. Kim. 1997. Long term immunological effect of ginseng on HIV-infected patients. *Abstr Gen Meet Am Soc Microbiol* 97:247. (Abstract No. E44).
- Choi, H.K., D.H. Seong, K.H. Rha. 1995. Clinical efficacy of Korean red ginseng for erectile dysfunction. *Int J Impot Res* 7(3):181186.
- Chong, S.K. and V.G. Oberholzer. 1988. Ginsengis there a use in clinical medicine? *Postgrad Med J* 64 (757):841846.

- Collomp, K. et al. 1996. Ginseng et exercice supramaximal. *Science et sports* 11:250251.
- D'Angelo, L. et al. 1986. A double-blind, placebo-controlled clinical study on the effect of a standardized Ginseng extract on psychomotor performance in healthy volunteers. *J Ethnopharmacol* 16(1):1522.
- Deutsches Arzneibuch*, 10th ed. (DAB 10). 1991. (With subsequent supplements through 1996.) Stuttgart: Deutscher Apotheker Verlag.
- Dharmananda, S. 1999. Personal communication to A. Goldberg, Jun 6.
- Dorling, E. and A.M. Kirchdorfer. 1980. Do ginsenosides influence the performance? Results of a double-blind study. *Notabene Medici* 10(5):241246.
- Engels, H.J. and J.C. Wirth. 1997. No ergogenic effects of ginseng (*Panax ginseng* C.A. Meyer) during graded maximal aerobic exercise. *J Am Diet Assoc* 97(10):11101115.
- Engels, H.J., J.M. Said, J.C.Wirth. 1996. Failure of chronic ginseng administration to affect work performance and energy metabolism in healthy adult females. *Nutr Res* 16:12951305.
- Forgo, I. 1980. Doping control of top-ranking athletes after a 14-day treatment with Ginsana. Report of the doping Commission of the International Amateur Boxing Association, Basle, Switzerland.
- . 1983. Effect of drugs on physical performance and hormone system of sportsmen. *M nchener Medizinische Wochenzeitschrift* 125(38):822824.
- Forgo, L., L. Kayasseh, J.J. Staub. 1981. Einfluss eines standardisierten Ginseng extraktes auf das allgemeinbefinden, die reaktionsfähigkeit, lungenfunktion und die gonadalen hormone [Effect of a standardized ginseng extract on general well-being, reaction time, pulmonary function and gonadal hormones]. *Med Welt* 32(19):751756.
- Forgo, I. and A.M. Kirchdorfer. 1981. On the question of influencing the performance of top sportsmen by means of biologically active substances. *Arztliche Praxis* 33(44):17841786.
- . 1982. The effect of different ginsenoside concentrations on physical work capacity. *Notabene Medici* 12(9):721727.
- Forgo, I. and G. Schimert. 1985. The duration of effect of the standardised ginseng extract G115 in healthy competitive athletes. *Notabene Medici* 15(9):636640.
- Foster, S. 1991. Asian Ginseng, *Panax ginseng*. *Botanical Booklet Series*, No. 303. Austin: American Botanical Council.
- Foster, S. and Y. Chongxi. 1992. *Herbal Emissaries: Bringing Chinese Herbs to the West*. Rochester, VT: Healing Arts Press. 102112.
- Gianoli, A.C. and D. Riebenfeld. 1984. Doppelblind-Studie zur Beurteilung der Vertrglichkeit und Wirkung des standardisierten Ginseng-Extraktes G115. *Cytobiologische Revue* 8(3):177186.
- Gillis, C.N. 1997. *Panax ginseng* pharmacology: a nitrous oxide link? *Biochem Pharmacol* 54:18.
- Gross, D., D. Krieger, R. Efrat, M. Dayan. 1995. Ginseng extract G115 for the treatment of chronic respiratory diseases. *Schweiz Zschr Ganzheits Medizin* 1:2933.
- Han, B.H. et al. 1983. Studies on the antioxidant components of Korean ginseng. III. Identification of phenolic acids. *Arch Pharmacol Res* 4:5458.
- Han, B.H. et al. 1998. Effect of red ginseng on blood pressure in patients with essential hypertension and white coat hypertension. *Am J Chin Med* 26(2):199209.
- Hu, S.Y. 1976. The genus *Panax* (ginseng) in Chinese medicine. *Econ Bot* 30(1):1128.
- Japanese Pharmacopoeia*, 12th ed. (JP XII). 1993. Tokyo: Government of Japan Ministry of Health and WelfareYakuji Nippo, Ltd. 127128.
- Jiang, H.W., Z.H. Qian, W.L. Weng. 1992. [Clinical study in treating qi-deficiency and blood-stasis syndrome of angina pectoris with qi xue granule] [In Chinese]. *Chung Kuo Chung Hsi I Chieh Ho Tsa Chih* 12(11):663665, 644.
- Konno, C., K. Sugiyama, M. Kano, M. Takahashi, H. Hikino. 1984. Isolation and hypoglycaemic activity of panaxans A, B, C, D, and E, glycans of *Panaxginseng* roots. *Planta Med* 50(5):434436.
- Lange, D. and U. Schippmann. 1997. *Trade Survey of Medicinal Plants in GermanyA Contribution to International Plant Species Conservation*. Bonn: Bundesamt f r Naturschutz. 6972.
- Le Gal, M., P. Cathebras, K. Str by. 1996. Pharmaton capsules in the treatment of functional fatigue: A double-blind study versus placebo evaluated by a new methodology. *Phytother Res* 10:4953.
- Leung, A.Y. and S. Foster. 1996. *Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics*, 2nd ed. New York: John Wiley & Sons, Inc.

- Lewis, W.H. 1986. Ginseng: A Medical Enigma. In: Etkin, N.L. (ed). *Plants in Indigenous Medicine and Diet: Biobehavioral Approaches*. Bedford Hills, N.Y.: Redgrave Publ. Co. 290305.
- Liu, C. and P.G. Xiao. 1992. Recent advances on ginseng research in China. *J Ethnopharmacol* 36(1):2738.
- McGuffin, M., C. Hobbs, R. Upton, A. Goldberg. 1997. American Herbal Product Association's *Botanical Safety Handbook*. Boca Raton: CRC Press.
- Melisch, R., P. Fomenko, B. Hejda. 1997. The Status of *Panax ginseng* in the Russian Far East and Adjacent Areas: A Matter for Conservation Action. *Medicinal Plant Conservation* 4:1113.
- Meyer-Buchtela, E. 1999. *Tee-Rezepturen Ein Handbuch f r Apotheker und rzte*. Stuttgart: Deutscher Apotheker Verlag.
- Morris, A.C. et al. 1996. No ergogenic effect of ginseng ingestion. *Int J Sport Nutr* 6(3):263271.
- Mulz, D. and F. Degenring. 1989. Doping control after a 14-day treatment. *Pharmazeutische Rundschau* 11:22.
- Mulz, D., G. Scardigli, G. Jans, F.H. Degenring. 1990. Long term treatment of psycho-asthenia in the second half of life. *Pharmakologische Rundschau* 12:86.
- Ng, T.B. and H.W. Yeung. 1986. Scientific basis of the therapeutic effects of ginseng. *Folk Med* 139151.
- sterreichisches Arzneibuch*, Vols. 12. (AB). 1981. Wien: Verlag der sterreichischen Staatsdruckerei.
- Petkov, V.D. and A.H. Mosharrof. 1987. Effects of standarized ginseng extract on learning, memory, and physical capabilities. *Am J Chin Med* 15(12):1929.
- Pharmacope Franaise Xe dition* (Ph.Fr.X). 19831990. Moulins-les-Metz: Maisonneuve S.A.
- Pharmacopoeia Helvetica*, 7th ed. Vol. 14.(Ph.Helv.VII). 1987. Bern: Office Central Fdral des Imprints et du Matriel.
- Pieralisi, G., P. Ripari, L. Vecchiet. 1991. Effects of a standardized ginseng extract combined with dimethylaminoethanol bitartrate, vitamins, minerals, and trace elements on physical performance during exercise. *Clin Ther* 13(3):373382.
- Pujol P. et al. 1996. Effects of ginseng extract (G115) alone and combined with other elements on free radical production and haemoglobin reoxygenation following a maximal stress test. *Int Pre-Olympic Sci Cong: Dallas; July* 1014.
- Quiroga, H.A. 1982. Comparative double-blind study of the effect of Ginsana G115 and Hydergin on cerebrovascular deficits. *Orientacion Medica* 1281:201202.
- Quiroga, H.A. and A.E. Imbriano. 1979. The effect of *Panax ginseng* extract on cerebrovascular deficits. *Orientacion Medica* 1208:8687.
- Reinold, E. 1990. The use of ginseng in gynecology. *Natur Ganzheits Med* 4:131134.
- Rosenfeld, M.S. 1989. Evaluation of the efficacy of a standardized ginseng extract in patients with psychophysical asthenia and neurological disorders. *Semana Med* 173(9):148154.
- Saito, H., Y. Yoshida, K. Takagi. 1974. Effect of *Panax ginseng* root on exhaustive exercise in mice. *Jpn J Pharmacol* 24(1):119127.
- Salvati, G. et al. 1996. Effects of *Panax ginseng* C.A. Meyer saponins on male fertility. *Panminerva Med* 38(4):249254.
- Sandberg, F. 1980. Vitality and senilitythe effects of the ginsenosides on performance. *Svensk Farmaceutisk Tidskrift* 84(13):499502.
- Sankary, T. 1989. Controlled clinical trials of Anginlyc, Chinese herbal immune enhancer, in HIV seropositives. *Int Conf AIDS* 5:496. (Abstract No. B.596).
- Scaglione, F., G. Cattaneo, M. Alessandria, R. Cogo. 1996. Efficacy and safety of the standardized ginseng extract G115 for potentiating vaccination against the influenza syndrome and protection against the common cold. *Drugs Exp Clin Res* 22(2):6572. [Corrected; published erratum appears in 22(6):338.]
- Scaglione, F. et al. 1990. Immunomodulatory effects of two extracts of *Panax ginseng* C.A. Meyer. *Drugs Exp Clin Res* 16(10):537542.
- Scaglione, F., R. Cogo, C. Cocuzza, M. Arcidiacono, A. Beretta. 1994. Immunomodulatory effects of *Panax ginseng* C.A. Meyer (G115) on alveolar macrophages from patients suffering with chronic bronchitis. *Int J Immunother* 10(1):2124.
- Schardt, D. 1999. Ginseng. *Nutrition Action Healthletter* May:1011.
- Singh, V.K., S.S. Agarwal, B.M. Gupta. 1984. Immunomodulatory activity of *Panax ginseng* extract. *Planta Med* 50(6):462465.

Sotaniemi, E.A., E. Haapakoski, A. Rautio. 1995. Ginseng therapy in non-insulin-dependent diabetic patients. *Diabetes Care* 18(10):13731375.

State Pharmacopoeia of the Union of Soviet Socialist Republics, 10th ed. (USSR X). 1973. Moscow: Ministry of Health of the U.S.S.R.

Takeda, A., M. Yonezawa, N. Katoh. 1981. Restoration of radiation injury by ginseng. I. Responses of X-irradiated mice to ginseng extract. *J Radiat Res (Tokyo)*. 22(3):323335.

Takeda, A., N. Katoh, M. Yonezawa. 1982. Restoration of radiation injury by ginseng. III. Radioprotective effect of thermostable fraction of ginseng extract on mice, rats and guinea pigs. *J Radiat Res(Tokyo)*. 23(2):150167.

Thommessen, B and K. Laake. 1996. No identifiable effect of ginseng (Gericomplex) as an adjuvant in the treatment of geriatric patients. *Aging(Milano)* 8(6):417420.

Tu, G. (ed.). 1992. *Pharmacopoeia of the People's Republic of China* (English Edition 1992). Beijing: Guangdong Science and Technology Press. 163164.

USSR X. See *State Pharmacopoeia of the Union of Soviet Socialist Republics*.

Van Schepdael, P. 1993. Les effets du ginseng G115 sur la capacit physique de sportifs d'endurance. *Acta Therapeutica* 19:337347.

von Ardenne, M. and W. Klemm W. 1987. Measurements of the increase in the difference between the arterial and venous Hb-O₂ saturation obtained with daily administration of 200 mg standardised ginseng extract G115 for four weeks. *Panminerva Med* 29(2):143150.

Wichtl, M. and N.G. Bisset (eds.). 1994. *Herbal Drugs and Phytopharmaceuticals*. Stuttgart: Medpharm Scientific Publishers.

World Health Organization (WHO). 1999. 'Ginseng radix.' *WHO Monographs on Selected Medicinal Plants*, Vol. 1. Geneva: World Health Organization. 168182.

Yamamoto, M., T. Uemura, S. Nakama, M. Uemiya, A. Kumagai. 1983. Serum HDL-cholesterol-increasing and fatty liver-improving actions of *Panax ginseng* in high cholesterol diet-fed rats with clinical affect on hyperlipidemia in man. *Am J Chin Med* 11(14):96101.

Yen, K.Y. 1992. *The Illustrated Chinese Materia MedicaCrude and Prepared*. Taipei: SMC Publishing, Inc. 40.

Yun, T.K. and S.Y. Choi. 1998. Non-organ specific cancer prevention of ginseng: a prospective study in Korea. *Int J Epidemiol* 27(3): 359364.

. 1995. Preventive effect of ginseng intake against various human cancers: a case-control study on 1,987 pairs. *Cancer Epidemiol Biomarkers Prev* 4(4):401408.

Yun, T.K., S.Y. Choi, Y.S. Lee. 1993. Cohort study on ginseng intake and cancer for population over 40-year-old in ginseng production areas (a preliminary report). (Meeting Abstract (201993): 132.) Second International Cancer Chemo Prevention Conference: Berlin.

Zuin, M., P.M. Battezzati, M. Camisasca, D. Riebenfeld, M. Podda. 1987. Effects of a preparation containing a standardized ginseng extract combined with trace elements and multivitamins against hepatotoxin-induced chronic liver disease in the elderly. *J Int Med Res* 15(5):276281.

Additional Resources

Sorenson, H. and J.A. Sonne. 1996. Double-masked study of the effects of ginseng on cognitive functions. *Curr Ther Res* 57:959968.

Sticher, O. 1998. Biochemical, Pharmaceutical, and Medical Perspectives of Ginseng. In: Lawson, L.D. and R. Bauer (eds.). 1998. *Phytomedicines of Europe: Chemistry and Biological Activity*. Washington, D.C.: American Chemical Society. 221240.

Tang W. and G. Eisenbrand. *Panax ginseng* C.A. Mey. 1992. *Chinese Drugs of Plant Origin: Chemistry, Pharmacology, and Use in Traditional Modern Medicine*. New York: Springer Verlag. 711737.

This material was adapted from *The Complete German Commission E MonographsTherapeutic Guide to Herbal Medicines*. M. Blumenthal, W.R. Busse, A. Goldberg, J. Gruenwald, T. Hall, C.W. Riggins, R.S. Rister (eds.) S. Klein and R.S. Rister (trans.). 1998. Austin: American Botanical Council; Boston: Integrative Medicine Communications.

1) The Overview section is new information.

2) Description, Chemistry and Pharmacology, Uses, Contraindications, Side Effects, Interactions with Other Drugs, and Dosage sections have been drawn from the original work. Additional information has been added in some or all of these sections, as noted with references.

3) The dosage for equivalent preparations (tea infusion, fluidextract, and tincture) have been provided based on the following example:

- Unless otherwise prescribed: 2 g per day of [powdered, crushed, cut or whole] [plant part]
- Infusion: 2 g in 150 ml of water
- Fluidextract 1:1 (g/ml): 2 ml
- Tincture 1:5 (g/ml): 10 ml

4) The References and Additional Resources sections are new sections. Additional Resources are not cited in the monograph but are included for research purposes.

This monograph, published by the Commission E in 1994, was modified based on new scientific research. It contains more extensive pharmacological and therapeutic information taken directly from the Commission E.

Excerpt from Herbal Medicine: Expanded Commission E Monographs
Copyright 2000 American Botanical Council
Published by Integrative Medicine Communications
Available from the [American Botanical Council](#).

American Botanical Council, 6200 Manor Rd, Austin, TX 78723
Phone: 512-926-4900 | Fax: 512-926-2345 | Email: abc@herbalgram.org

The information on this site is intended for educational purposes only and is not a substitute for the advice of a qualified healthcare professional. The American Botanical Council does not endorse or test products, nor does it verify the content or claims made, either implicit or explicit. ABC does not accept responsibility for the consequences of the use of this information or its most up-to-date accuracy. ABC is an independent, nonprofit, tax-exempt research and education organization under IRS section 501(c)(3). All text, images and content Copyright © 2010 American Botanical Council, unless otherwise noted.