

# Ginseng Extract

## INCI name

Propanediol, Aqua (Water), Panax Ginseng Root extract

## Description



FAMILY: Araliaceae

GENUS: *Panax*

SPECIES: *Panax bipinnatifidus*, *Panax ginseng*, *Panax japonicus*, *Panax quinquefolius*, *Panax vietnamensis*, *Panax wangianus*, *Panax zingiberensis*

COMMON NAMES: Panax ginseng, Asian ginseng, Oriental ginseng, Chinese ginseng, Japanese ginseng, Korean ginseng, American ginseng, man root

BOTANICAL NAME: *Panax ginseng* C. A. Meyer, *Panax quinquefolius*.

## HABITAT

Ginseng is native to *China, Indochina, Korea, Vietnam and Japan*. It grows in shady places (direct sunlight damages these plants) and dense conifer forests.

At present, no wild-growing ginseng can be found. Ginseng is only available from cultivations (Korea, China, Japan, Bulgaria and eastern Russia).

## DESCRIPTION

*Panax Ginseng*, common name "Ginseng", is a perennial bush member of the Araliaceae family. This plant grows up to 30-70cm; leaves are palmatilobed; flowers are white, arranged in umbels; fruits are red berries. The yellow-brown roots are the used part of the plant and are harvested from 3-6 years old plants. A root reaches 20 mm in diameter, 20-30 cm long (maximum 1 meter) and weighs about 200 g.

Each root bears a number of secondary roots and some yellowish-white rings at the distal end. Ginseng extract is produced from the roots of *Panax ginseng*.

## TRADITIONAL USES

Ginseng has been known for three thousand years, the Chinese have been using it as an herbal remedy. Oriental physicians prescribed ginseng as an essential tonic to restore health.



Early Chinese medicine books claimed ginseng could enlighten the mind and increase wisdom. The Chinese also used ginseng to treat ailments of the digestive and respiratory systems, nervous disorders, diabetes, to keep the elderly warm in winter, and to increase energy

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and improve memory. The **life-prolonging effects** of ginseng were first described during China's Liang Dynasty (220–589 AD).

Ginseng was not used in Western medicine until the 1950s, when scientists in the Soviet Union began studying its health benefits and concluded that it was an "adaptogen"—that is, something that helps the body adapt to outside stresses and ward off disease. The Vietcong used it extensively to treat gunshot wounds during the **Vietnam War**.

## CHEMISTRY

The medicinal effects of ginseng are thought to be due to a group of about two dozen substances in the root called **ginsenosides**, about 2-3%; these triterpene saponins are also called panaxosides.

Ginseng contains 0.05% essential oil and other active principles such as Heterogeneous polysaccharides (panaxans A, B, C, D, E), proteins (panaxagin), oligoelements, vitamins B and C, phenol acids derived from the benzoic acid (salicylic, vanillic, coumaric acids), steroids, enzymes (amylase, glycolase) and amino acids (tyrosine, lysine, histidine, arginine, etc.).

There are a large number of studies showing the action of Ginseng on specific body functions and on the skin immune defense system. It has been demonstrated that Ginseng increases phospholipids synthesis, stimulates protein synthesis, inhibits protein enzymatic degradation in fibroblast and when applied on the skin it contributes to optimize the cutaneous metabolism.

## Effects in Cosmetic Products

### Anti-aging activity

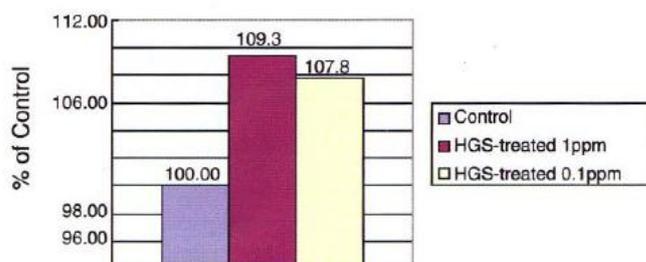
When applied to the skin, Ginseng extract may increase the production of collagen.

Yeom MH et al (2003) carried out a study to evaluate the anti-wrinkle activity of ginseng roots.

These researchers prepared a hydrolyzate of ginseng saponins (HGS), containing high levels of K (20-O-β-D-glucopyranosyl-20(S)-protopanaxadiol) and F1 ginsenoside, and they evaluated the in vitro HGS contribution to collagen synthesis and metalloproteinase-1 (MMP-1) degradation, and the in vivo HGS contribution to collagen synthesis.

Total collagen synthesis was determined in NHDF (normal human dermal fibroblasts) treated with 0.1 ppm and 1 ppm HGS. Both HGS concentrations increased total collagen synthesis as

compared to control (untreated normal human skin fibroblasts) as shown in this figure:



### Collagen synthesis (Yeom, M.H. et al., 2003)

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Collagen makes up most of the connective tissues that support the skin. The production of collagen is known to decrease with age. Therefore, the topical use of Ginseng extract may help to reduce wrinkles and age lines. Topical Ginseng creams and lotions have been used with success in treating scars.

The *In vivo* HGS effects on collagen synthesis were evaluated on hairless, 50-weeks-old mice, which had been exposed to UV radiation for 30 weeks in order to induce photo-aging.

The authors conducted patch tests on these mice for 7 consecutive days with HGS 0.1% and 1%. After this, it was measured the pro-collagen I synthesis by using immunofluorescence.

Results showed that the HGS treatment significantly increased collagen synthesis as compared to control. Furthermore, the authors also observed that higher HGS concentrations induced higher collagen synthesis.

Therefore, ginseng extract is useful to formulate cosmetic products with anti-aging activity.

## **Antioxidant activity**

The antioxidant action of ginseng extract was verified by evaluating the inhibition of xanthine oxidase-induced or TPA-induced (tetradecanoylphorbol acetate) generation of superoxide radicals, and by evaluating the inhibition of lipid peroxidation through different mechanisms (increase of superoxide dismutase production or reduction of monosaccharide auto-oxidation) (*Alonso, J., 2004*).

## **Immunostimulatory activity**

Polysaccharides in the roots of P.ginseng showed immunostimulatory action by promoting macrophage phagocytosis and inducing interferon production four times higher than normal.

There is also an *in vivo* study that shows that ginseng polysaccharides promote the synthesis of interleukin-2 (a type of cytokine signalling molecule in the immune system).

Different studies showed that acidic polysaccharides from ginseng roots stimulated the production of Natural Killer lymphocytes and of interleukin-8 by human monocytic cells (*Alonso, J., 2004*).

It is known that aging slows activation of the immune system, which results in reduced cell regeneration. Because of its immunostimulatory activity, ginseng extract is a beneficial treatment for aged skin.

## **Hair grow stimulatory activity**

The hair grow stimulatory effect was shown by Matsuda H et al. (2003) using mouse vibrissal follicles in organ culture. They conclude that Ginseng Radix possesses hair growth promoting activity, and its bioactive components are partially attributable to the ginseng saponin components ginsenoside Rb1 and ginsenoside 20 (S)-G-Rg3.

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Additionally, obtained by processing red ginseng crude roots, also showed hair growth promoting activity. These results indicated that ginseng root possesses hair growth promoting activity, and that such activity is mainly attributable to the above mentioned saponins. Thus, ginseng extract is recommendable to formulate cosmetic products with hair growth stimulatory

It has also been shown that Ginseng has a strong anti Free radical effect making this Ginseng Glycolic extract quite attractive in skin care especially for Nourishing creams, anti wrinkles preparations, and all kind of "Aged" skins.

## Cosmetic Applications:

Action	Active	Cosmetic Application
Action on collagen fibers	Ginsenosides	Anti-aging Firming products
Antioxidant	Salicylic acid Vanillic acid Ginsenosides	Anti-aging
Immunostimulatory	Polysaccharides	Anti-ageing
Hair growth stimulatory	Ginsenosides	Anti-alopecia

## Dosage – Solubility – Processing

### A- DOSAGE:

3% to 5% in skin care formulation  
1% to 3% in hair lotion  
5% to 10% in Anti Hair loss formulation

### B- SOLUBILITY:

Hydro-soluble

### C- PROCESSING:

Ginseng Extract is compatible with most of the raw materials normally used in cosmetics; nevertheless, it is the duty of the formulator to make sure of the stability of the formulae with the necessary tests.

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## Analytical Data

- APPEARANCE: Amber liquid
- DENSITY at 20 °C: 1,045 – 1,075
- PH VALUE: 6-7
- PRESERVATIVES: Preservatives Free
- MICROBIOLOGY:
  - Total germs: <50 CFU
  - Pathogen: Absence
- TOLERANCE: Excellent.
- STORAGE: Store at room temperature, dry and away from light.

If original container is opened, to avoid secondary microbiological contamination handle with special care.

## Sources:

### *Anti-Wrinkle Activity of Hydrolyzed Ginseng Saponins*

May 6, 2003 .Yeom, MH ;Sung, DS; Woo, KS; Kang, Kim, DH; Chang, IS; Kang, HH; Lee, OS, Pacific R&D Center

Alonso, Jorge. Tratado de Fitofármacos y Nutracéuticos. Barcelona: Corpus, 2004, p: 533-544 (633.8 ALO).

### *Processed Panax ginseng, Sun Ginseng Increases Type I Collagen by Regulating MMP-1 and TIMP-1 Expression in Human Dermal Fibroblasts*

Kyu Choon Song, Tong-Shin Chang, Hyejin Lee, Jinhee Kim, Jeong Hill Park, and Gwi Seo Hwang

### *Promotion of hair growth by ginseng radix on cultured mouse vibrissal hair follicles.*

Hideaki Matsuda, Miho Yamazaki, Yusuke Asanuma and Michinori Kubo

<http://www.cancer.org/treatment/treatmentsandsideeffects/complementaryandalternativemedicine/herbsvitaminsandminerals/ginseng>