

ORIGIN AND SHAPE OF KOREAN GINGENG

Korean Ginseng, a medicinal herb, naturally exists in only three regions: Korea, Manchuria, and the Littoral province of Siberia. The Korean peninsula is the best place to grow ginseng, because ginseng has stringent requirements for the plant's growth, and Korea has the ideal temperature zone, plenty of rain in the summer, proper coldness in the winter, etc. The value of Korean Ginseng has been known in the world since the 4th century B. C. Books written in this era documented ginseng as emergent medicine and tonic for long-life. Ginseng was first mentioned as a tonic as early as 48-33 B. C. in Interpretation of Creatures written by You Shi of ancient China. Moreover, Shen Nung Pen-Ts'ao-ching, the worlds oldest extant Chinese medicinal book, described the quality and production area of ginseng, medicinal effects of ginseng, and showed that high quality ginseng mainly came from the Korean kingdom of Kokuryo. Russian botanist C. A. Meyer named it panax ginseng in 1843. The genus name, panax means cure all in Greek (pan meaning all, Axos meaning heal), therefore, true ginseng means Korean ginseng. Korean Ginseng has a root system which includes the rhizome head, main root, and lateral roots from which numerous fine roots and root hairs develop.

The shape of Korean Ginseng undergoes a process of transformation as the roots develop. In the first year of sowing, ginseng roots undergo about 17 months of the elongation process (4 to 6 months) and flesh-up process (7-9 months) to become seedlings bearing heavy hair. The hair is trimmed off upon transplant in the second year of sowing. New lateral roots begin to develop, and the length of the main roots and number of lateral roots is set in the third year of sowing. In the fourth and fifth years, main roots flesh up and the lateral and fine roots grow fully to form the unique shape of ginseng roots. Six-year-old ginseng, which is used for manufacturing red ginseng, has a 7~10cm long main root (diameter: 2~3cm) with several lateral roots and a large rhizome head. Its total length is about 34cm and weight is 40 ~ 120g (in some cases, up to 300g).

WHAT ARE THE DIFFERENCES BETWEEN WHITE AND RED GINSENG?

(1) KINDS OF KOREAN GINSENG PRODUCTS

1) WHITE GINSENG

Skinned, fresh ginseng that is dried in the sun or by hot air, with no steam applied is called “White Ginseng”. White ginsengs are divided into straight ginseng, half-curved ginseng and curved ginseng according to their final shapes after the drying process. Straight ginseng retains the original shape from the field and is skinned. Half-curved ginseng is produced by folding the roots upward to reduce the entire length to about half of the original length. Curved ginseng is produced by rolling the entire length of the ginseng root into a round shape before drying.

2) RED GINSENG

Red ginseng is one that is not skinned before it is steamed or otherwise heated to be finally dried. Korean red ginsengs are graded into Chun-sam, Ji-sam and Yang-sam according to their firmness of rhizome, proportion of main roots to lateral roots, colors, characteristics of body tissues, etc. In the course of the steaming process, ginseng starch is gelatinized, causing an increase in saponin and the activation of effective ingredients. Although shapes and colors of Korean ginsengs vary depending on the type of processing, with slight differences in ingredients, their overall efficacy and superior properties of each remains the best in the world.

(2) WHAT KINDS OF INGREDIENTS DOES KOREAN GINSENG CONTAIN?

Korean Ginseng contains saponin, an element of glycosides; nitrogenous compounds such as protein, amino acid, nucleic acid and alkaloid; fat-soluble ingredients such as fatty acid, ethereal oil, polyacetylene, phenolic compound, phytosterol and terpenoid; saccharides such as monose, oligosaccharide, polysaccharide and pectin; vitamins and inorganic substances; and many other useful ingredients. Thus, ginseng contains an abundance of diversified chemical elements hardly found in other medicinal herbs.

Major medical actions of ginsenosides, Ginseng saponin, exhibit diversified effects in regulating physical functions by influencing endocrinium, central nervous system, immune system and metabolic system. Of the more than 30 different ginsenosides contained in Korean ginseng, more than ten individual ginsenosides have been proven for their medical actions. These ginsenosides exhibit similar or opposite properties. Thus, ingredients akin or dissimilar to each other in terms of properties coexist in Korean ginseng. For example, ginsenoside-Rb1, a typical PD family saponin, exhibits inhibitive function to central nervous system while ginsenoside-Rg1, a typical PT family saponin, exhibits excitative function.

WHAT IS SO SPECIAL ABOUT KOREAN GINSENG?

Korean Ginseng is not only a species different from those of American ginseng or Chinese Sanchi ginseng, but is grown in an optimal geographical environment and climatic conditions suitable for the growth of superior quality ginseng. The latitudinal ranges in which the majority of Korean Ginseng farming is carried out extends from 36° to 38° north, where the growing period (180 days) is longer than other areas (120 to 130 days), which is instrumental to the harder and denser development of internal tissues and the safekeeping of innate flavor.

According to "Zhongcao Yaoxue (Chinese herbal pharmacy)", ginseng possesses the properties of invigorating physical power, regulating the condition of spleen and relaxing stresses on heart. The "Shennong Bencaojing" defines that ginseng is the primary medicine to be administered for promoting vitality of the five viscera (liver, heart, lungs, kidney and spleen), and that it helps restore composure, removes causes of illness to the five viscera, improves eyesight, promotes wisdom, quiets nerves and promotes longevity when consumed over a prolonged period of time. The "Bencao Gangmu" further expands the efficacy of ginseng. Its theory is widely applied today in dealing with clinical symptoms using ginseng. The efficacy and applications of ginseng are also described in many other journals of Oriental medicine, which rate ginseng as a master medicine playing the major role in prescriptions. A master medicine is a herbal medicine which people usually take under normal conditions to safeguard themselves from possible contracting of diseases and to maintain their health. It is free of toxicity or harm, even when taken in large amounts or over a prolonged period of time.

※ Characteristics of ginsengs from various sources

Korean Ginseng	American Ginseng	Chinese Ginseng	Bamboo Ginseng
			
Grown in Korea (human body shape)	Grown in U.S.A. or Canada (column shape)	Grown in southern parts of China: Yunnan and Chinagshi provinces (small carrot shape)	Autogenous ginseng in Japan (bamboo root shape)

HOW DO YOU COMPARE KOREAN GINSENG WITH GINSENGS OF OTHER COUNTRIES?

Korean Ginseng and ginsengs of other countries can be compared in terms of saponin components and non-saponin components.

(1) Saponin components

- Compared to western ginseng grown in U.S.A. or Canada, or Sanchi ginseng grown in China, Korean Ginseng contains various types of saponins (ginsenosides) that show increased pharmacological activities.
- Especially, Korean red ginseng contains substances that promote micro-physiological activities which are not found in American or Sanchi ginseng.
- Korean Ginseng characteristically shows comparatively uniform distribution of various ginsenosides.
- * With regard to the composition of major ginsenosides, which have pharmacological effects, western ginseng grown in U.S.A. shows a lopsided distribution with G-Rb1 and G-Re accounting for 75% of the entire ginsenosides, while Korean Ginseng shows considerably uniform distribution with G-Rb1, G-Rg1, G-Re, G-Rc and G-Rb2 respectively accounting for 23%, 19%, 15%, 12%, and 11%.

(2) Non-saponin components

- Total saponin content of Korean Ginseng is 3-4%, slightly less than that of those grown in U.S.A. or China, which is 4-5%. But, there are plenty of active non-saponin components in Korean ginseng.
- Especially, Korean Ginseng contains much more acidic polysaccharides than those from other countries. Acidic polysaccharides are known to prevent obesity or hyperlipemia by enhancing immunity against cancer, inhibiting lipolysis and lowering intestinal absorption of cholesterol or fat.
- The content of thermostable protein in Korean Ginseng (the protein that survives destruction at boiling), which is known to be a substance that effectively resists radioactive ray (e.g. X-rays and gamma rays) disorders, is greater than that contained in either American or Sanchi ginseng. The amino acid derivatives (Arg-Fru-Glc) possessing vasodilative property are yet to be found in American or Sanchi ginseng.

※ Comparison of protein and free amino acid contents between Korean Ginseng and ginsengs of other countries
(Unit : mg/g dry weight)

Classification	Korean Ginseng			American Ginseng	Chinese Ginseng
	Main root	Lateral roots	Fine roots		
Soluble protein	38.0	29.5	19.6	11.4	17.0
Thermostable protein	28.1	22.3	12.8	10.1	7.3
Free amino acid	73.7	54.9	14.8	32.8	24.7

※ Physiological activities of micro-ginsenosides contained Korean red ginseng

Ginsenosides	Pharmacological activities	Remarks
Ginsenoside-Rh2	* Suppresses cancerous cell proliferation * Prompts redifferentiation of cancerous cells (change to normal cells) * Induces active thanatos of cancerous cells	None in American or Sanchi ginseng
Ginsenoside-Rg3	* Inhibits tolerance to anti-cancer remedium * Inhibits vasodilation and clump of plastocytes	None in American or Sanchi ginseng
Ginsenoside-Rf	* Blocks calcium channel for sensorineural cells → Suppresses pain	None in American or Sanchi ginseng
Ginsenoside-R0	* Exhibits antiplatelet and anti-inflammation effects	None in American or Sanchi ginseng

※ Concentration of medical ingredients (Comparison of saponin in ginsengs of various sources)

Unit: kinds

	Korean Ginseng		Hwagi-sam (American ginseng)	Sanchi-sam (Chinese ginseng)	Bamboo-sam (Japanese ginseng)
	Red Ginseng	White Ginseng			
Total kinds of saponin	30	23	14	15	8
Panaxadiols	18	15	9	6	6
Panaxatriols	11	7	4	9	4
Oleananes	1	1	1	-	1

* Resource: Agricultural & Fishery Marketing Corporation, Seoul, Korea (www.ginseng.or.kr)