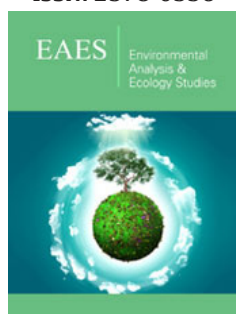


Distribution of *Panax Ginseng* and its Economic Importance

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Abstract

Panax ginseng, a famous and precious traditional Chinese medicine in China, which is commonly used in the treatment of central nervous system disease, cardiovascular diseases, endocrine system diseases, cancer, and other diseases. Due to its excellent medicinal properties, it is widely used in East Asia as a Chinese herbal medicine. Especially in Korea, China and Japan, ginseng is considered as the most important of all herbs and is also known as the king of herbs. This paper aimed to review the origin and distribution of Chinese ginseng, describes the economic significance of ginseng industry to the country, and the gap between Chinese ginseng industry and Korean ginseng industry, and puts forward some suggestions, hope to provide reference for the research direction and future development of ginseng industry. 2.

Keywords: *Panax ginseng*; Ginseng distribution; Ginseng market; Economic importance

Introduction

Panax ginseng C. A. Meyer belongs to the genus *Panax* of the family *Araliaceae* and is an important medicinal plant [1]. As a valuable traditional Chinese medicine, ginseng is known as the “King of herbs” and the head of the three treasures in northeast China for its nourishing and strengthening, invigorating qi and calming Shen and anti-aging effects [2-4]. China is the birthplace of medicinal ginseng; ginseng has a history of more than 4000 years. Ginseng cultivation and processing has a history of about 1600 years [5]. From the distribution, ginseng (wild ginseng) is mainly distributed in East Asia in China, Russia, Korea, Japan and other countries [6]. Only Changbai Mountain, in China’s Jilin province, now produces more ginseng because of over-excavation and destruction of the forest environment. Ginseng is still found in small quantities in Russia but has largely disappeared in Japan and North Korea [7]. Cultivated ginseng (*Panax ginseng*) is mainly distributed in China, Korea and Japan. Among them, Chinese ginseng accounts for 70% of the world’s total and occupies a major position. The genus *Panax*, first used by Russian botanist Carl a Meyer [8], originated from the Greek pan, meaning “All” and axos, meaning “Medicine”, indicating that ginseng is a good medicine for all diseases [9]. The root of ginseng is similar to the human body, so the English name “Ginseng” is derived from the Chinese word “Ginseng” [10]. In recent years, with its medicinal value gradually recognized, ginseng has become a widely concerned species in the world [11]. This paper aimed to review the origin and distribution of Chinese ginseng, describes the economic significance of ginseng industry to the country, and the gap between Chinese ginseng industry and Korean ginseng industry, and puts forward some suggestions, hope to provide reference for the research direction and future development of ginseng industry.

Origin and Distribution

Records of the medicinal value of ginseng first appeared in the Shennong Ben Cao Jing in the Eastern Han dynasty, which is the oldest herbal medicine and plant pharmacopoeia in the world [12]. After that, Li Shizhen synthesized the available data, and made a systematic

and comprehensive description of the medicinal value of ginseng in *Bencao Gangmu*. In the study of traditional Chinese medicine, ginseng can be used for the defense and treatment of various diseases, with tonic and strong, blood coagulation and anti-aging effects, etc [13,14]. The medicinal value of ginseng in modern medicine has been gradually confirmed [15]. Due to its therapeutic effects [16], which are attributable to anticancer [17-19], antidiabetic [20,21], antistress [22,23], antioxidant [24,25], and immunomodulatory [26,27] activities. In recent years, ginseng and American ginseng in the United States and other Western countries have become very popular dietary supplements [28]. Ginseng is widely recognized not only because of its intrinsic medicinal value, but also because of its magical legend in oriental traditional culture, which is regarded as the essence of heaven and earth and the crystallization of nature [29]. Therefore, ginseng is not only an important traditional Chinese medicine, but also a cultural symbol in the traditional Chinese medicine system. China, South Korea, North Korea, Japan, and Russia are the main countries in the world where ginseng is cultivated. China has the largest output of ginseng, accounting for 70% of the total world output, of which Jilin province is the main producing area [30].

In Chinese history, ginseng can be divided into two major producing areas, Shangdang County (present-day Shanxi, Hebei, Shandong and other provinces) as the representative of the Central Plain region, and Liaodong (present-day Jilin, Liaoning, Heilongjiang) as the representative of the Northeast region. Nowadays, ginseng is mainly distributed naturally in eastern Liaoning, eastern half of Jilin and eastern part of Heilongjiang. It grows in deciduous broad-leaved forest or coniferous temperate broad-leaved mixed forest several hundred meters above sea level. In China, ginseng is mainly concentrated in the northeast region between 39°N and 47°N, ranging from Kuandian Manchu Autonomous County in the south to Yichun in the Heilongjiang. The central production areas of ginseng are Fusong County, Changbai, Jingyu, Jian, Dunhua, Antu and other counties (cities) in Jilin province. Among these production areas, the planting area, yield per unit area and total yield of ginseng in Changbai Mountain area rank first in the world. Jilin province is the most important ginseng production base in China, whose annual output of ginseng is about 80% of the total output of ginseng in China [31]. Ginseng is now widely cultivated in Heilongjiang, Jilin and Liaoning, and introduced in Hebei and Shanxi. In addition, ginseng is also distributed in the Far East of Russia and North Korea and is also cultivated in South Korea and Japan. Wild ginseng is now endangered due to long term overharvesting, with only a handful of populations in east Asia, including Northeast China, the Korean Peninsula, and the Far Eastern Federal District [32]. Radix Ginseng, also known as wild ginseng, is defined in the Pharmacopoeia of the People's Republic of China as the whole growth process of ginseng in a natural environment, without artificial control and management, not seriously harmed by natural growth. Wild ginseng grows in a special environment, most of which grow in the mountain area under the broad-leaved mixed forest, where the light is weak, the humidity is moderate, the soil humus content is high, the structure

is loose, and the acidity is weak [33]. Wild ginseng was once widely distributed in eastern and northern Asia. However, in the 1980s, due to the reduction of forest area and over exploitation, wild ginseng germplasm resources faced the dilemma of withering and extinction. Due to slow individual development and low self-reproduction ability, wild ginseng has become a very rare plant, and was listed as a national rare and endangered plant in 1992. At present, only a few wild ginsengs are distributed in Northeast China, Korean Peninsula and far east of Russia [34-36]. Wild ginseng is a rare Chinese medicinal material with high medicinal value, and it has been paid attention by people all over the world because of its unique traditional Chinese culture [37].

According to different planting methods, cultivated ginseng can be divided into forest ginseng, mountain ginseng and garden ginseng. Ginseng under forest means that the seeds of cultivated ginseng are planted in the forest environment suitable for the growth of wild ginseng, which germinates and grows in the natural environment. The seeds of ginseng germinate in artificial environment, and then will be transplanted in the environment of forest after 1-3 years of seedling stage. *Panax ginseng* has two different growth periods and longer growth years. Compared with the forest ginseng and the mountain ginseng, the whole process of seed germination and planting is controlled in the artificial environment. Although the quality of *Panax ginseng* is not as good as that of *Panax ginseng* under forest and *Panax ginseng* under forest, it is the main source of *Panax ginseng* in market because of its advantages of easy planting, fast growth and high yield [38-42]. There are three kinds of garden ginseng in China: common ginseng, Biantiao ginseng and Shizhu ginseng. Common ginseng is mainly produced in Fusong County, Jingyu County and Changbai Korean Autonomous County of Jilin province. It is characterized by short taproot, short branch root, many fibrous roots, strong cold tolerance, fast growth and high yield. Biantiao ginseng is mainly produced in the Ji'an ginseng planting area of Jilin province. It is mainly of round reed and long neck type. It is characterized by long taproot, few supporting roots, few fibrous roots and rapid growth. Shizhu ginseng is mainly produced in Huanren County, Liaoning province. Its natural conditions are unique, the soil is mostly yellow sand, there is granite on the mountain and its geographical location is adjacent to the river, the air humidity is larger. Although its growth rate is slow and its yield is low, it has the characteristics of strong stress resistance, age tolerance and late maturity. In addition, cultivated ginseng of long neck and round shoulder has high commercial value because of its beautiful root body.

Economic Importance

Ginseng is widely used all over the world. In addition to traditional Chinese medicine, ginseng is also made into food and health care products in many countries [6]. As the medicinal and edible properties of ginseng have been widely recognized, its demand has been increasing. In China, ginseng is not only used as Chinese herbal medicine for clinical treatment, but also developed a lot of ginseng health products, ginseng culture industry, which

has brought considerable economic benefits to China. More than 20 functional products, such as ginseng qianjin tablet, Shenrong xuehe soft capsule, have been developed with ginseng as raw material. More than 10 products have been put on the market. We have also developed more than 50 products in 4 series, such as honey ginseng, beverage, cosmetics and extracts, among which more than 20 products, such as honey red ginseng tablet, ginseng tea and ginseng wine, have been marketed. The comprehensive development ability of ginseng has been continuously enhanced, the comprehensive utilization of ginseng root, stem, leaf, flower and fruit has been realized, and the economic competitiveness of ginseng products in China and even in the world has been continuously improved. Under the background of economic globalization, the economic competition between countries and regions is becoming more and more intense, which is concentrated on the international competitiveness of industries. Because of its unique medicinal value and edible value, ginseng occupies a certain market share in the market of various countries, and has extremely important economic significance [43]. In the global medicinal plant trade, the economic value of ginseng is estimated to be more than US\$ 2.1 billion [44].

According to the statistics, the international market of ginseng is 6000~6500t, in which American ginseng and ginseng occupy half. In ginseng market, China accounts for 80%-90%, while South Korea, North Korea and Japan account for 10%-20%. But in general, the high-end market of ginseng products is occupied by Japan, South Korea and Europe. As a traditional export commodity of Chinese medicinal materials, the price of Chinese and Korean ginseng varies greatly in export price. Before 1998, the export price of Chinese ginseng was relatively high in the international market, and the average export price was about 40 US dollars/kg. In the following years, the export price of ginseng fell to US \$10 per kg due to the increasing acreage and overproduction of ginseng. Domestic ginseng production peaked in 2000, causing the average export price of ginseng to fall to US \$6.69 per kg that year. After 2000, due to the decrease of planting area and supply of ginseng, the price of ginseng has rebounded, but it is still at a low level. Chinese ginseng price fluctuates constantly, market share is not high, but Korean ginseng has been playing a pivotal role in ginseng market, not only the export price exceeds domestic ginseng 10 times, but also the market share is increasing year by year.

Ginseng industry is one of the important export industries in China. Chinese ginseng has a large output, low output value and weak international competitiveness, mainly occupying the low-end international market. By contrast, the Chinese ginseng industry's strong rival is South Korea, which has small output, high output value and strong international competitiveness, and usually occupies the high-end international market [45]. Although the export competitiveness of Chinese ginseng products has always been weaker than that of Korean ginseng products, in 2011, the international market share of Chinese ginseng products exceeded that of Korean ginseng products, and the competition became more and more fierce.

Thus, ginseng industry for a country's economic significance cannot be underestimated, the development of ginseng industry in the country, its economic benefits will also have great growth. However, China and Korea attach different importance to ginseng industry, which leads to different development of ginseng industry in the two countries. South Korea has been the government's dominant player, while China has been the ginseng industry of corporate leaders seeking profits. From all stages of ginseng industry chain, China lags behind South Korea. Although the output of Chinese ginseng is high, but the added value of products is low, lack of intensive processing, which is the problem of ginseng industry in China. Therefore, the Chinese government should pay more attention to ginseng industry. Although ginseng industry is not a pillar industry in the primary industry, but as a local industry, especially in Jilin province, we should focus on the development of ginseng industry to improve the competitiveness of Chinese ginseng industry.

Jilin province is the planting base of Chinese medicinal materials in North China. Ginseng planting is one of the planting ways of Chinese medicinal materials in Jilin province. The output of ginseng in Jilin province is the first in the whole country, and it accounts for more than 98% of the total output of Chinese medicinal materials in Jilin province. According to the related statistical data, Jilin province, as a major agricultural province, the proportion of investment in agriculture is less than 20%. Ginseng is one of the traditional Chinese medicinal materials in agricultural industry, and the investment in ginseng industry is relatively small. Moreover, the main producing areas of ginseng in our country are concentrated in Jilin province. Due to the lack of management, we have blindly expanded the planting area for many years, resulting in product supply exceeding demand, as well as chaotic management and lack of regulation, make participate in the field, participate in the interests of farmers have been seriously harmed. This directly caused the quality of Chinese ginseng is uneven, lack of competitiveness in the international market, can only be sold as raw materials at very low prices to Japan, Europe and the United States and other countries [46].

Suggestions on the Development of Ginseng Industry

In order to improve the economic significance of ginseng industry in China, we put forward the following suggestions, hoping to promote the development of ginseng industry and improve product competitiveness.

Create a ginseng brand

In South Korea, for example, the government has concentrated on developing the brand "CHEONG KWAN JANG". We should also concentrate our efforts on building one or more ginseng brands, limit the output and quality standards, unify the authorization mark management, increase government investment in ginseng industry, and enhance the international competitiveness of ginseng industry in China.

Build a pollution-free ginseng base

To raise the price of ginseng is to improve the quality of our ginseng, ginseng of good quality will be more competitive. Therefore, we suggest that the government and relevant departments to implement policies to support the development of ginseng industry. We should increase the extension of science and technology, strengthen the training and education of ginseng farmers, vigorously develop pollution-free ginseng, improve the quality of ginseng, fundamentally solve the problem of high pesticide residues ginseng [3,47-50].

Strengthening the management of ginseng industry

Compared with Korea, ginseng is not managed and developed as an industry in our country. But only as a kind of Chinese herbal medicine to manage, so the ginseng industry is still at a low level of free production stage [51-54]. Therefore, in the main ginseng producing areas, we need to set up a special ginseng management agency, ginseng cultivation, processing, marketing from the implementation of the licensing system. We should also set up special support funds for ginseng industry, mainly for ginseng product development, leading enterprises and ginseng support key projects.

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