

Ginseng Research in China During The Past 20 Years

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Ginseng (*Panax ginseng*) has been used as a tonic drug in Chinese Traditional Medicine for two thousand years. It is believed to be significantly beneficial for human health. During the past 20 years, due to the modern chemical, biological and pharmacological technology, the ginseng research of China has been developed rapidly. Major work has been carried out by many laboratories in Beijing, Shanghai and Shonzheng, etc. Since most of the research works were supported by pharmacological companies, many interesting papers sometimes are of confidential limitation. It is not easy to find those papers in common library. To make a comprehensive review of ginseng is very difficult and reluctant.

1. Cultivation

Cultivation of ginseng is very important and basic work. Ginseng tissue and cell culture have been used in the research work. Botanic scientists has been working hard on the species, including its locality, time, maturation, the parts to be collected. For example, the optimum condition for ginseng is between -10°C to 10°C with annual rainfall. In the apothecary or the market, high quantity or rhizome is very important.

2. Chemical components

It is well known that ginseng contains many active components. Besides the proteins and carbohydrate which usually exist on most herbs and plants, ginseng contains many valuable ingredients including : volatile oil, saponins known as panoxosides or ginsenosides (R₀, R_{a1}, R_{a2}, R_{b1}, R_{g1},... R_{h1}), antioxidants, peptides, polysaccharides, fatty acids, alcohols, vitamin, maltol, sali-

cyclic acid and other organic acids. R_{b1}, R_{g1} and some organic acids are the main researching substances at present.

3. Pharmacology and Immunology

Scientists have been studying in Cardiovascular, Central Nervous, Endocrine System, Immune System, Sexual Development, RNA and DNA metabolism, Anticancer activity and Anti-aging effects of ginseng. It is reported that both R_{b1} and R_{g1} extracted from ginseng could improve memory deficits and brain function as well as stimulate the immune system in animal study by many laboratories. It is reported that R_{b1} could facilitate acetylcholine(ACH) release from rat brain hippocampal slices. The increase in ACH release is not associated with an increase in calcium uptake into nerve terminals, but is associated with an increase in uptake of the precursor choline. The results may suggest that R_{b1} may be clinically useful for alleviation of

some symptoms of senile dementia of the Alzheimer type (SDAT).

4. Clinical study

Promote the function of heart and mental activities in heart failure. Decrease blood sugar and promote the general healthy condition in diabetic patients. Dispel fatigue, safeguard the liver, etc. A regular daily small dose keeps on health and strong preserves one's high complexion and assures one longevity. Recently, ginseng has been shown to increase WBC in AIDS patients. Traditional herbalists are effective on many different kinds of disease in clinical trials. Doses is very important for clinical use, and it

should be paid more attention for "Ginseng Abuse", "Hyperexciting" and "Addiction".

5. Future

It is no doubt, ginseng has contributed a great efficacy to human health in the past thousand years. Ginseng is a great herbal. Yet, there are many problems in the market. Less study on its pharmacokinetics and bioavailability.

International cooperation and scientific information exchange are most necessary. Hard work is still required. That highlight of ginseng will be arrived in the coming 21st century.