J Pharmacol Sci **95**, 139 (2004)

Journal of Pharmacological Sciences

Forum Minireview

Proof of the Mysterious Efficacy of Ginseng: Basic and Clinical Trials: Preface

Eiichi Tachikawa[1,*]

[1]*Department of Pharmacology, School of Medicine, Iwate Medical University, Uchimaru 19-1, Morioka 020-8505, Japan*

Received February 12, 2004; Accepted March 26, 2004

Keywords: adrenal gland, ginseng, ginsenoside, memory deficit, metabolic activation

Is ginseng a prophylactic, panacea, or placebo? That is a question. According to a tradition from ancient times, ginseng has been thought to have mysterious effects like nourishment, aphrodisia, and prennial youth. Therefore, it is one of the most popular medicinal plants and has been used for the treatment and protection against various diseases. Although the constituents of ginseng have been the most studied among the herbal medicines, there are very few instances where ginseng and its components are clinically used. The reasons for this are considered to be as follows: ginseng is suspicious because of its ambiguous pharmacological effects; it is outdated because of the utilization from old; and it is not strongly effective, and so forth.

The oldest Chinese traditional medical book, *Sheng-nong Ben-cao Jing*, mentions that ginseng has many effects such as the maintenance of visceral functions, tranquilization, protection against diseases, and improvement of memory and longevity. These beneficial effects lead us to consider that ginseng has an action to maintain homeostasis of the human body under both physiological and pathological conditions. Based on the symposium on "Proof of the mysterious efficacy of ginseng", which was held at the 76th Annual Meeting of The Japanese Pharmacological Society (March 25, 2003, Fukuoka), this Forum minireview introduces the studies demonstrating that ginseng basically and clinically has useful pharmacological effects on central nervous systems, cancer, and stress and thus aims at dismissing the above-described prejudice against ginseng.

By in vitro experiments, Dr. Tachikawa and Dr. Kudo reveal that the saponins and their intestinal bacterial metabolites inhibit the secretion of catecholamines from bovine adrenal chromaffin cells, a model of a stress-responding organ, via a blockade of nicotinic acetylcholine receptors. On the other hand, Dr. Nishijo et al. report that red ginseng ameliorates cognitive deficits in ischemic and aged rats, and Dr. Hasegawa elucidates both the pharmacokinetics of saponins in ginseng following the oral administration and the important anti-neoplastic effects of their metabolites. Clinically, it is clearly demonstrated by Dr. Kaneko and Dr. Nakanishi that ginseng has anti-stress effects.

Ginseng is commercially available in white and red types obtained by means of different processing methods. White ginseng root is carefully cleaned to remove adherent soil and dried in air, while red ginseng is prepared by steaming the ginseng root. Therefore, it has been reported that there are some differences in the constituents and their amounts of constituents between white and red types. In ginseng, the main components are carbohydrates (60 – 70%), and nitrogen-containing compounds are included 12 – 16%. Saponins (ginsenosides) are well known as major constituents exerting beneficial effects and are present at 3 – 6%.

Finally, I would be happy if these reviews help to promote understanding of the pharmacological effects of ginseng and its components, and thereby lead to further clinical usage of ginseng.

*Corresponding author. FAX: +81-19-651-1677
E-mail: etachika@iwate-med.ac.jp