

# Geographical Authentication of the Korean Panax Ginsengs by Multivariate Statistical Analysis and Neutron Activation Analysis

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Korean Panax ginseng has been used for centuries as a food and alternative traditional medicine supplements in far eastern countries. Korean Panax ginseng was claimed to have a high potential of curing diseases, invigorate the human body, and restore body balance. It is not easy to verify the medicinal benefits of ginseng using science, as there are contradictory results from different studies. Still, it is well known that ginseng is one of the best food supplements because ginsengs contain highly concentrated minerals that originated from the ground. The quality and efficacy of ginsengs, evaluated in terms of chemical composition, are definitely different according to their geographical origin's growing conditions and natural environments. The cultivation of Panax ginseng should be carried out with the prohibition of chemical fertilizer according to the guidelines of the National Agricultural Cooperative Federation (NACF). Hence its chemical composition is more dependent on the soil it grows with than another plant is. To discriminate the effect of geographical origin on their chemical composition, proper and efficient techniques are consistently required. In this paper, to expand our fundamental knowledge on the Panax ginsengs as a dietary supplement, we attempted to evaluate its chemical composition by measuring the inorganic elemental content with the aid of neutron activation analysis (INAA). Fifty Panax ginsengs were collected from the major growing regions in Korea. A total of 27 elements were analyzed in the samples and certified reference materials (1570a-Trace Elements in Spinach Leaves and 1633b- Constituent elements in coal fly ash) for analytical quality control. And we carried out the geographical authentication of the Korean Panax Ginsengs by multivariate statistical analysis.

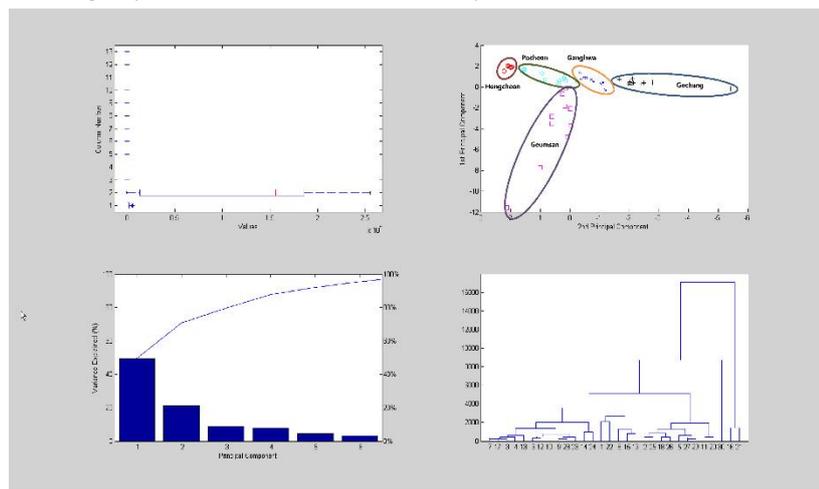


Fig. 1. Geographical authentication of the Korean Panax Ginsengs.

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