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The effects of high-temperature/high-pressure treatment on the major active ingredients and anti-oxidant activity of Korean ginseng (*Panax ginseng* C.A. Meyer)

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Korean ginseng (*Panax ginseng* C.A. Meyer) is a major medicinal herb that is commonly found in Korea. Korean ginseng has diverse active components such as saponins, acidic polysaccharides, phenolic compounds, poly-acetylene, alkaloids, and essential oils. A lot of functionalities including immunity and blood circulation improvement effects, blood glucose and blood pressure regulation effects, anti-cancer and cancer-prevention efficacy, sexual health benefits, an anti-fatigue effect, and anti-oxidation efficacy have been reported. Until now, regarding ginseng processing technology, various studies to development new ginseng products with high functionalities such as puffing and fermentation have been performed, in addition to conventional Red Ginseng (RG) products manufactured by steaming and drying. This study showed High-Temperature/High-Pressure (HTHP) treatment lead to changes of its major active ingredients and improvements in its anti-oxidation efficacy. The color of ginseng rapidly changed, while the total sugar content, acidic polysaccharide content, and phenolic compounds continued to decrease until the steaming pressure reached 140°C, 3 kg/cm², compared to dried ginseng (DG). Ginsenosides Rg1 and Rb1 greatly decreased while nonpolar ginsenoside Rg3 increased. The optimal time of HTHP treatment was about 30 min. The ginseng (HG) subjected to HTHP (140°C, 3 kg/cm², 30min) treatment showed higher ABTS and DPPH scavenging activity compared to DG or commercially available RG. The HTHP treatment significantly protected oxidative stress in the C₂C₁₂ myoblasts cell lines and enhanced the gene expression of anti-oxidant enzymes. On the basis of these results, it is considered that HTHP treatment might be a processing technology to produce a new ginseng product with high anti-oxidant and other related functionalities.

Biography

Hee Do Hong received his PhD from Seoul National University in Republic of Korea. Now he is a Head, Principal Researcher of Traditional Food Research Center, Korea Food Research Institute. His major research area is isolation, purification and analysis of bioactive compounds from natural products and development of health food products. He has published more than 70 papers in reputed journals.

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