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## Neuroprotective effect of compound K isolated from fermented Korean *Ginseng* through stimulation of Nrf2 signaling pathway

**Jong-Sang Kim**

Kyungpook National University, South Korea

*Ginseng*, a traditional herbal medicine, has been extensively used in Korea and other East Asian countries for millenniums to maintain physical vitality, boost immune system, and delay aging process. It has been processed into various kinds of dietary supplement and alternative medicine with booming market demands. *Ginseng* and its products account for major portion in 'Health Functional Foods' market in Korea. Compound K (20-O-( $\beta$ -D-glucopyranosyl)-20(S)-protopanaxadiol) is a major ginsenoside metabolite detected in the urine and blood of rats after *Ginseng* administration. As compound K was reported to have anti-inflammatory and anti-oxidative activities, we hypothesized that it could exert neuroprotective action. Compound K significantly reduced cytotoxicity and Reactive Oxygen Species (ROS) generation induced by glutamate in HT22 cells, whereas it did not restore glutathione depletion caused by glutamate. In addition, it was further investigated whether compound K affected the expression of Heme Oxygenase (HO)-1, one of the major cellular antioxidant defense systems, and it was found that it dose-dependently increased HO-1 expression. Compound K-mediated cytoprotection of HT22 neuronal cells from glutamate insult was abrogated by either HO-1 inhibitor (Tin protoporphyrin, SnPP) or AKT inhibitor (LY294002). In conclusion, the present results demonstrate for the first time that compound K protects neuronal cells against glutamate-induced oxidative injury through the induction of HO-1 expression, which is, in turn, activated maybe through Nrf2-Keap1 and PI3K/AKT signaling pathways.

### Biography

Jong-Sang Kim completed his PhD from University of California at Berkeley in 1991 and Postdoctoral training for 1 year in the same campus. He is the Tenured Full Professor of School of *Food Science and Biotechnology*, Kyungpook National University. He has published more than 180 papers in peer-reviewed international journals and has been serving as a Senior Editor of *Food Science and Biotechnology*, a SCI journal.

[jongsangkim@gmail.com](mailto:jongsangkim@gmail.com)

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