

Fermentation of ginseng sprout extract by lactic acid bacteria reduces the inflammatory responses of lipopolysaccharide-stimulated RAW 264.7 macrophages

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Chronic inflammation can increase the risk of developing pathological conditions, including cancer and cardiovascular diseases. Food fermentation is a traditional process to change the complex compounds into bioactive, functional, and nutritious compounds using microbial enzymes and microorganisms. It has several benefits for the development of functional foods. As ginseng exhibits various biological and pharmacological activities, ginseng sprouts have been developed as medicinal foods owing to their short growth period in soilless cultivation systems. To understand the functions of the fermented ginseng sprouts related to the immune response, ginseng sprout powder was used to extract with distilled water. The sterilized ginseng sprout extract was fermented by inoculating two strains of *Lactobacillus* and *Enterococcus* for 24 h. Then, the inhibitory effects of ginseng sprout extract fermentation on lipopolysaccharide (LPS)-induced inflammation in RAW 264.7 macrophages were investigated by evaluating the expression of pro-inflammatory mediators. The total polyphenol content and antioxidant activity were also estimated. Results showed that the anti-inflammatory effects of ginseng sprout extract ferment are mediated through the modulation of macrophage-mediated inflammation-associated functions, such as the upregulation of cytokines, nitric oxide, and prostaglandin E2. In addition, ginseng sprout extract ferment exerts antioxidant effects as evidenced by the increase in polyphenol content, DPPH scavenging activity, and SOD activity.