

# **The Non-Saponin Fraction of Korean Red Ginseng Prevents Sarcopenia by Maintaining Immune Homeostasis in Old C57BL/6J Mice**

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## **Background**

The non-saponin fraction (NSF) of Korean red ginseng is a powder in which saponin is eliminated from red ginseng concentrate by fractionation. In this study, we investigated the effect of NSF on age-associated sarcopenia in old C57BL/6J mice.

## **Methods**

Young (3–6-month-old) and old (20–24-month-old) C57BL/6J mice were orally administered NSF (50 or 200 mg/kg/day) every day for 6 weeks. Throughout the oral treatment period, body weight and grip strength were assessed once a week. After sacrifice, hindlimb muscles were cut out and used for western blotting and hematoxylin and eosin staining to examine the impacts of NSF on sarcopenia and inflammation/oxidative stress. Flow cytometry analysis was conducted to investigate the effect of NSF on immune homeostasis. Blood samples were collected, and the serum levels of insulin-like growth factor 1, pro-inflammatory cytokines, and glutathione were measured.

## **Results**

NSF significantly increased muscle strength, mass, and fiber size in old mice. NSF recovered age-associated disturbance of immune homeostasis by retaining CD11b<sup>+</sup>F4/80<sup>+</sup> macrophages and regulating inflammatory biomarkers. NSF also inhibited the age-induced expression of oxidative stress factors. Thus, NSF diminished conventional low-grade chronic inflammatory/oxidative factors, which are the major source of sarcopenia.

## **Conclusion:**

NSF retained immune homeostasis and regulated indicators of chronic inflammation and oxidative stress, resulting in anti-sarcopenia effects in aged C57BL/6J mice. NSF is a promising restorative agent that could be used to improve sarcopenia in the elderly.

**Keywords:** Korean red ginseng, sarcopenia, old mice