

## Immunomodulatory Effect of Deer Antler Extract

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**Abstract :** Velvet antler (VA), the immature antlers of male deer, is traditionally used for thousands of years in Asian countries, such as Korea, China, Taiwan, and Mongolia. It has been considered to improve immune system and physical strength. The goal of this study was to investigate the immunomodulatory effect of deer antler velvet using in vitro system. In the first step, the effects of VA (70% ethanol extract) on the proliferation of splenocytes, bone marrow cell, and macrophages were determined. Next, the effect of VA on the production of nitric oxide and phagocytic activity in macrophage were measured. The results showed that VA treatment increased concanavalin-A stimulated splenocyte, bone marrow cells, and macrophage proliferation in a dose dependent manner. VA at 50 and 100 ug/mL concentrations significantly enhanced the concanavalin-A stimulated splenocyte proliferation by 8.8% and 18.5%, respectively. The proliferation of bone marrow cells, isolated from 5wk-old ICR mice, were increased by 25.2% and 46.5% by 50 and 100 ug/mL VA treatment. RAW 264.7 cell proliferation reached peak value at 50 ug/mL of VA treatment exhibiting 108% of the basal value. Nitric oxide production by RAW 264.7 macrophage cells was slightly reduced by VA treatment but was not statistically significant. Moreover, the phagocytic activity of macrophages was enhanced by VA treatment. These results indicate that VA is effective in immune system.

**Keywords :** deer antler, splenocyte, bone marrow cells, macrophage proliferation, phagocytosis

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