

Ginseng saponin enhances the phagocytic activity of canine peripheral blood leukocytes in vitro

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Introduction: The clinical and pharmacological activities of ginseng have been known to modulate immune function, metabolic process and neuro-endocrine system activities. Ginseng saponins are the principle active ingredients in formation of immune stimulating complex, a potent adjuvant able to induce both humoral and cellular immune reactions. The objective of this study was to investigate the effect of total ginseng saponin (GTS) on the phagocytic capacity of canine peripheral blood phagocytes.

Materials and Methods: GTS was kindly donated by the Central Research Institute of KT & G (Taejeon, Korea). Clinically healthy three Beagle dogs were used as blood donors. Peripheral blood phagocytes were isolated by Percoll solution (GE Healthcare Bio-Sciences AB, Sweden) and 1.5% dextran (molecular weight, 200,000; Wako Ltd., Osaka, Japan) treatment. The phagocytic capacity of phagocytes were analyzed by flow cytometry (FACS Calibur, Becton Dickinson Immunocytometry System, NJ, USA). The phagocytic activity was assessed using FITC-latex beads (size : 1.95um, Sigma Chemical Co., MO, USA)

Results: GTS itself did not reveal any direct effect on the phagocytic activity of polymorphonuclear cells (PMN) and peripheral blood mononuclear cells (PBMC), But it enhanced the phagocytic activity of the monocyte-rich cells fractioned by cell size from dot plot profile in flowcytometric cytography of PBMC. While culture supernatant from PMN treated with GTS did not exhibit any effect on the phagocytotic activity of PMN, PBMC and monocyte-rich cells, culture supernatant from PBMC treated with GTS remarkably increased the phagocytic activities of PMN and monocyte-rich cells but not PBMC.

Relevance: These results suggest that GTS have an immunoenhancing effect on the phagocytic activity of canine peripheral blood phagocytes, which is most likely due to humoral substance(s) released from GTS-treated PBMC. GTS is believed to strengthen the immune function on canine peripheral blood phagocytes.

Key words: ginseng saponin, phagocytic activity, peripheral blood phagocytes, dog.

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