

Summary of the DVM, thesis No:11067 Faculty of Veterinary Medicine, Urmia University.

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Author: Fatemeh Keyvan

Title:Immunomodulatory effects of Naringenin in Balb/c mice immunized with ovalbumin

Summary:

Naringenin is a naturally occurring flavonoid found in grapefruit and other citrus fruits. The effect of one-month oral administration of naringenin (10, 20, and 40 mg/kg) or prednisolone (2 mg/kg) on peritoneal macrophage function was compared in the first set of experiments. Separate evaluations were conducted on the effects of naringenin on *in vivo* and *ex vivo* T helper (T_H) lymphocyte responses and their subsets in mice immunized with ovalbumin (OVA). Animals challenged with OVA received varying oral doses of naringenin or prednisolone from two days prior to immunization to 28 days after immunization. The administration of naringenin or prednisolone increased macrophages' respiratory burst, nitric oxide, and IL-10 production while decreasing their IL-12 production. Macrophages isolated from rats administered 40 mg/kg naringenin had greater phagocytic potential than those isolated from rats administered prednisolone. *In vivo* results revealed that OVA-challenged rats treated with 40 mg/kg naringenin or prednisolone had decreased delayed-type hypersensitivity comparable to control mice. The splenocyte proliferation index was lower in the prednisolone-treated group than in the naringenin-treated group, even at 40 mg/kg. In the splenocyte cultures, both agents decreased T-bet expression but increased the expression of FOXP3. Naringenin, in contrast to prednisolone, did not affect GATA3 expression. The 40 mg/kg naringenin dose reduced ROR γ t more effectively than prednisolone. As naringenin inhibited antigen-specific lymphocyte proliferation less than prednisolone and was incapable of altering the level of Th2 responses, this indicated its potential to act as an immunomodulator as opposed to prednisolone's immunosuppressive properties.

Keywords: Balb/c mice, Immunomodulator, Naringenin, Ovalbumin