Propolis Efficacy on TNF-α Cytokines Production in old Mice with and Without Systemic Candidiasis

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Background & Objectives: Propolis is a natural product and its immunomodulatory efficacy has been demonstrated; however, there is a little information concerning its effect on the innate and the adaptive immunity of old mice. The purpose of this study was to investigate the effect of propolis on cytokine level (TNF-α) in old healthy mice and old mice with systemic candidiasis.

Methods: Fifty Balb/C mice aged 8 months were divided into 5 groups. Mice group 1 received ethanolic propolis (100 mg/kg/day) by gavage for 7 days, mice group 2 received both *Candida albicans* (*C. albicans*) intravenously (2×105 cell) and propolis, and mice group 3 received only *C. albicans* (intravenously, 2×105 cell). After 8 days of experiments, all mice were euthanized, blood samples were collected, and the spleens were excised. Splenocytes were isolated immediately and cultured in RPMI-1640 medium without stimulation and/or stimulated in the presence of Concanavalin A (ConA) for 48 h. Supernatants of splenocytes cultures and serum of mice were tested for cytokines (TNF-α, IFN-γ and IL2) assay by Enzyme-linked immunosorbent assay (ELISA).

Results: Orally-administered propolis treatments showed that it alone suppressed cytokine TNF-α in the serum of mice when compared to controls, whereas the cytokines production was strongly stimulated in old mice receiving propolis altogether with *C.albicans*.

Conclusion: Our results indicated that propolis alone cannot stimulatre cytokines production in old mice, but it may have a beneficial effect on pathogenesis of systemic candidiasis by modulating levels of cytokines including TNF-α.

Keywords: Propolis; systemic Candidiasis; TNF-α