

The Effect of Safranal on Th₁/Th₂ Cytokine Balance

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ABSTRACT

Background: Several biological and medical benefits of Saffron, *Crocus sativus* (Iridaceae), have been demonstrated. However, mechanisms of actions for purified constituents are greatly unknown. **Objective:** To examine the effects of Safranal, a main constituent of Saffron stigma, on cell viability and cytokine profile of peripheral blood mononuclear cells (PBMC) were examined. **Methods:** Effects of Safranal at 0.1, 0.5 and 1 mM concentrations were evaluated on cell viability and production of interleukin 4 (IL-4), IL-10 and interferon- γ (IFN- γ) from non-stimulated and phytohemagglutinin (PHA) stimulated PBMCs, compared to 0.1 mM dexamethasone and saline. **Results:** In stimulated cells, different concentrations of Safranal caused significant decrease of lymphocytes viability ($p < 0.001$ for all concentrations). All concentrations of Safranal inhibited IFN- γ and IL-10 secretion in stimulated cells ($p < 0.01$). In addition, high concentration of Safranal significantly decreased cell viability of non-stimulated PBMCs ($p < 0.001$). The effect of 1 mM Safranal on IL-4 secretion was less than dexamethasone ($p < 0.05$). Safranal showed a stimulatory effect on IFN- γ secretion in non-stimulated cells. The IFN- γ /IL-4 ratio at the presence of two higher Safranal concentrations both in non-stimulated and stimulated cells were significantly higher than those of control and PHA stimulated groups, respectively ($p < 0.05$). **Conclusion:** The IFN- γ /IL-4 ratio increases in the presence of Safranal which indicates an effect on Th1/Th2 balance. Therefore, Safranal may have therapeutic effects in inflammatory diseases associated with Th1/Th2 imbalance.

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