

Acacia Honey Exerts Anti-Inflammatory Activity through Inhibition of NF- κ B and MAPK/ATF2 Signaling Pathway in LPS-Stimulated RAW264.7 Cells

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Honey used as conventional medicine has various pharmacological properties. In the honey and anti-inflammatory effect, Gelam honey and Manuka honey has been reported to exert anti-inflammatory activity. However, the anti-inflammatory effect and potential mechanisms of acacia honey (AH) are not well understood. In this study, we investigated anti-inflammatory activity and mechanism of action of AH in LPS-stimulated RAW264.7 cells. AH attenuated NO production through inhibition of iNOS expression in LPS-stimulated RAW264.7 cells. AH also decreased the expressions of IL-1 β , IL-6 and TNF- α as pro-inflammatory cytokines, and MCP-1 expression as a pro-inflammatory chemokine. In the elucidation of the molecular mechanisms, AH decreased LPS-mediated I κ B- α degradation and subsequent nuclear accumulation of p65, which resulted in the inhibition of NF- κ B activation in RAW264.7 cells. AH dose-dependently suppressed LPS-mediated phosphorylation of ERK1/2 and p38 in RAW264.7 cells. In addition, AH significantly inhibited ATF2 phosphorylation and nuclear accumulation of ATF2 in LPS-stimulated RAW264.7 cells. These results suggest that AH has an anti-inflammatory effect, inhibiting the production of pro-inflammatory mediators such as NO, iNOS, TNF- α , IL-6, IL-1 β and MCP-1 via interruption of the NF- κ B and MAPK/ATF2 signaling pathways.

Keywords: Acacia honey, Anti-inflammation, Honey, Pro-inflammatory mediators

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