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Suppression of inflammatory cytokine responses in RAW264.7 cells by the essential oil from “Maqian” (*Zanthoxylummyrlacanthum* var. *pubescens*)

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Ethnobotanical studies found out that *Zanthoxylummyrlacanthum* var. *pubescens*(Huang) Huang, known as “Maqian” in Xishuangbanna, has been used as a traditional medicine by Dai people in this region. The fruit of Maqian is used as a home remedy for digestive disorder, detoxification, scabies, carbuncle swollen, as well as pain and swelling relief. To verify the medicinal mechanisms of Maqian, we investigated effects of the Maqian essential oil on inflammatory cytokine responses in RAW 264.7 macrophage cells. Cells were pre-incubated with Maqian essential oil for 30 min followed by LPS stimulation. After 24 h, cell medium was harvested for measurement of IL-1 β and TNF- α by ELISA. The maximum concentration of essential oil without toxicity to cells was found to be 0.04%. At concentrations below this level, Maqian essential oil inhibited LPS-induced production of IL-1 β and TNF- α in a dose-dependent manner, and impressively the inhibition was more potent than dexamethasone. To look whether Maqian essential oil suppress inflammatory cytokines at transcription level, total RNA was extracted from cells treated with LPS for 4h and 24h using TRIzol reagent and the mRNA expression was analyzed by real-time quantitative PCR. Cells pre-incubated with Maqian essential oil showed a dose-dependent inhibition of mRNA level of IL-1 β , TNF- α and IL-10. These results indicate that Maqian essential oil has potent suppression effects on inflammatory cytokine responses and the suppression is at protein level as well as transcription level. These findings suggest that Maqian essential oil might be a promising novel therapy for many inflammatory diseases.

Biography

Yang Jingjing got her bachelor's degree at the age of 22 from Hebei University. Currently, she is a graduate student at University of Chinese Academy of Sciences as well as Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences.

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