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# Effect of myrtle essential oil (MEO) on gene expression of cytokine profiles in the small intestine of broiler chicken

Mahmood Nazari[1*] and Sepideh Rostami[2]

[1] Associate Professor, Department of Animal Science, Faculty of Animal Science and Food Technology, Agricultural Sciences and Natural Resources University of Khuzestan, Mollasani, Iran
[2] Ph.D student of Animal genetic and Breeding, Faculty of Animal Science and Food Technology, Agricultural sciences and Natural Resources University of Khuzestan, Mollasani, Iran

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## Abstract

Myrtle essential oil (MEO) has antimicrobial, antioxidant, and anti-inflammatory effects. Especially, tannins and flavonoids in MEO have antioxidant properties. So, it can be expected that MEO can affect the immune system of broilers. Therefore, in this research, the effect of MEO on the gene expression of cytokines (IL-1, IL-2, IL-4, and IL-10) in the tissues of the small intestine of broiler chickens was investigated. For this purpose, 120 Ross 308 broiler chicks in a completely randomized design with 2 treatments, 5 replicates and 12 chicks were used in each replicate. The treatments included: 1- control diet, 2- basal diet plus 250 mg / kg MEO. After 42 days, at the end of testing one chickens each replicate were slaughtered and their tissues were excised quickly and transported with liquid nitrogen to the laboratory. Quantitative real-time PCR was used to measure the expression of the cytokines. Analysis of variance showed that the addition of 250 mg/kg of the myrtle essential oil (MEO) in the diet of broiler chickens had no significant effect on IL-2 and IL-10 gene expression. While the expression of IL-1 and IL-4 genes had a significant effect. These results indicate that the myrtle essential oil can play a role in the cellular immune response in the small intestine of broiler chicken by reducing pro-inflammatory cytokines. So, the anti-inflammatory aspect of MEO could be used by adding it to the diet of broilers.

**Key words**: Myrtle essential oil, Gene expression, Immune response, Cytokine

[*] **Corresponding Author**: Mahmood Nazari, Associate Professor, Department of Animal Science, Faculty of Animal Science and Food Technology, Agricultural Sciences and Natural Resources University of Khuzestan, Mollasani, Iran
E-mail: M.Nazari@asnrukh.ac.ir

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