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The effect of different levels of oak acorn on expression of IL-5 and IL-6 genes in Bursa Fabricius tissue of broiler chickens

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Abstract

Today, oak fruit as a food ingredient is identified as a substitute for corn in the poultry industry. However, this fruit contains significant amounts of phenolic compounds, such as tannins, which limits its use in poultry diets. Generally, food ingredients containing phenolic compounds can affect the expression of genes in the immune system. Therefore, the aim of this study was to investigate the effect of different levels of oak acorn on the expression of interleukin-5 (IL-5) and interleukin-6 (IL-6) genes in the bursa Fabricius tissue of broiler chickens. In this study, three diets containing zero, 15% and 20% oak fruits were used to feed broiler chicks in a 42-day period. Total RNA were extracted from bursa Fabricius tissue of 6 chickens for each treatment (18 broiler chickens) on day 42. The expression levels of IL-5 and IL-6 genes were normalized with β-actin gene as a reference gene. To analyze the gene expression data, REST, 2009, V2.0.13 software was used. The results of this study showed that expression of IL-6 gene in bursa Fabricius was not significantly different between treatments at day 42 although its expression in the treatment of 20% of oak acorn was decreasing. The expression of IL-5 gene in bursa Fabricius was significantly decreased in 15% and 20% oak acorn treatments compared to control group. Generally, replacing 15 to 20% of dietary corn with oak acorn can reduce the expression of immune system genes in the tissue of the Bursa Fabricius in broilers due to increased phenolic compounds in the diet. Therefore, it is recommended that lower levels of oak acorn be used in diet of broiler chickens.

Key Words: Immune system, Interleukin, Gene expression, Oak acorn, Broiler chicken

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