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Effect of Satureja khuzistanica essential oil in common and micro capsulated forms on performance, carcass quality, blood parameters, immune responses and microbial population of broiler chicken

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Abstract

To evaluation the effects of adding different levels of *Satureja khuzistanica* essential oil in non-capsulated and microcapsulated forms to diets on performance, carcass components, immune response, blood biochemical parameters, intestinal morphology, microbial flora and meat oxidative stability in broiler chickens, an experiment was conducted in a completely randomized design. In this experiment 400 Ross-308 (mixed sex) broiler chickens were used with 5 treatments, 4 replicates (20 chickens per replicate) in starter (1 to 10 days old), grower (11 to 24 days old) and finisher (25 to 42 days old) periods. Treatments were included: control (no additive), dietary containing levels of 400 and 500 mg/kg *Satureja* essential oil and dietary containing levels of half and one percent capsulated *Satureja* essential oil. The results of this study showed that the use of diets containing different levels of *Satureja* essential oil in non-capsulated and microcapsulated forms had not significantly different than the control group (no additive) on feed intake, feed conversion ratio, carcass characteristics, percentage of dry matter crude protein and fat and water holding capacity of the breast meat. The level of thyroid hormones (T3 and T4), blood biochemical parameters (cholesterol, triglyceride, HDL and LDL) and immune response were not affected by the experimental treatments. Although small intestine histology traits like length and width of villi, length to width of villi and length of villi to depth of crypt ratios were not affected by the experimental treatments, but adding capsulated *Satureja* essential oil at half percent level caused a significant decrease depth of crypt (P<0/05). Also, due to different holding times of breast meat in the freezer, the production of malondialdehyde in this tissue was significantly influenced by experimental treatments at 24 hours after freezing (P<0/05). Also, the results of this experiment showed that the use of diets containing *Satureja* essential oil in non-capsulated and microcapsulated forms, statistically caused a significant difference on the amount of free N breast meat at 0 and 48 hours after freezing (P<0/05). According to the results of this study, adding different levels of *Satureja* essential oil in non-capsulated and microcapsulated forms to diets, improves meat quality in the process of freezing and storage in broiler chickens.

Keywords: Blood Biochemical Parameters, Broiler Chicken, Intestinal Histology, Meat Oxidative Stability, *Satureja* Essential Oil, Performance.