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Effects of addition of Peppermint (*Mentha peppirata L.*) or Thymus (*Thymus vulgaris L.*) to diet on performance, rumen development and immune system function in suckling Sanjabi lambs

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Abstract

This study was conducted to investigate the addition of two medicinal plants, Peppermint (*Mentha peppirata L.*) or Thymus (*Thymus vulgaris L.*) on production performance, immune system, and rumen development of suckling Sanjabi lambs. Effects of (*Mentha peppirata L.*) or Thymus (*Thymus vulgaris L.*) on lambs production performance, immune system, and papillae growth in suckling period were investigated using 48 Sanjabi male lambs (10±1 days; 4.04±0.31 kgBW) based on a completely randomized design, with 3 treatments, 4 replicates and 4 observations per replicate. Treatments were control (basal diet), peppermint (basal diet + 3% Peppermint powder; Pep) and Thymus (basal diet + 3% Thymus powder; Thy). Diets were prepared isocaloric and isonitrogenous and the ratio of concentrate: forage was 70:30. Experimental diets were fed to lambs since the start of the third week until the end of suckling period (90 days old). Lambs were weighed every 15 days during the experimental period. At the end of 45th day of trial, 4 suckling lambs from each treatment were slaughtered to study rumen development and papilla growth. Before slaughtering, blood samples were collected to count the number of white blood cells. Results showed that the average weight of lambs at the end of the weaning period (90 d) for diets containing medical plants was significantly different from control treatment ($P<0.05$). The average daily gain of suckling lambs was 209, 204 and 166 (g/day) for Pep, Thy, and control, respectively, that was significantly higher in medicinal plants than control ($P<0.05$). There were no significant differences in papillae length and width among treatments. There was no significant difference among treatments in terms of live weight, carcass percentage, weights of total full and empty digestive tract and the relative weights of rumen and abomasum. Indeed, the results of white blood cells count indicated that the numbers of lymphocyte and neutrophils were similar in all treatments. In conclusion, it seems that suckling lambs diet supplementation with Pep or Thy powder improves average daily gain, rumen capacity, and also weaning weight of lambs.

Key words: suckling lamb, rumen papillae, medicinal plants, immunity system, blood metabolites.

