MINISTRY OF JIHAD-E-AGRICULTURE

Agricultural Research, Education and Extension Organization

Agriculture and Natural Resources Research Center of Kermanshah

Effects of inclusion Peppermint (Menthe piperita L.) & Thymus (Thymuse Vulgaris L.) to sheep's diet on nutrient digestibility and metabolizable energy using in vitro techniques

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Abstract

The aim of this study was to evaluate the effects of adding peppermint and/or thyme to typical fattening diet on nutrient digestibility and metabolizable energy of the diet using gas production technique. Four ruminally fistulated Sanjabi sheep were used based on completely randomized rotational design including four treatments and 4 replicates. Treatments were: 1. control (basal diet without herbs); 2. basal diet + 3% of peppermint powder (DM basis); 3. basal diet + 3% of thyme powder (DM basis); 4. basal diet + 3% of two herbs combined powder (with equal ratio). During the gas production experiments, values of gas produced were measured at 2, 4, 6, 8, 10, 12, 24, 48, 72 and 96 hours after incubation. Gas production parameters were also calculated at 24, 48 and 72 h. The min and max values of gas produced during the incubation time belong to treatments 1 (61.73) and 4 (58.09), respectively ($P<0.05$). Gas production rate during the total incubation time had no significant differences among treatments. Inclusion peppermint in diets resulted significant increase in lag time ($P<0.05$). Dry matter digestibility showed significant difference among treatments ($P<0.05$), as the highest and lowest digestibility coefficients achieved in control group and treatment 4, respectively. There were significant difference regards to NDF disappeared in 24 hours and partitioning factor among treatments and, as treatment 1 showed the best performance in case of both parameters. Metabolizable energy in the treatment contain combined powder was significantly ($P<0.05$) higher comparison to other treatments. In general, results showed that inclusion of mentioned herbal powder to basal diet had no positive effect on dry matter digestibility of diet.

Keyword: thyme, gas production, digestibility, Sanjabi sheep, peppermint