

Title: Methane production of goats fed different forage:concentrate ratio

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CH₄ from enteric fermentation in ruminants is not only an important greenhouse gas associated with environmental problems, but it also represents a loss of feed energy (20–150 kJ MJ⁻¹ intake), the nutrition also affect the methane production, and the use of cereal grains in the diet of ruminants depress methane production, and is well established in the literature that as increase the amount of concentrate in the diets, decreases occur on methane.

Based on these assumptions, this study aimed to evaluate the effect of forage: concentrate ratio on methane production and energetic efficiency of goats. A total of 15 Nubian goats, non-pregnant and non-lactating, were randomly distributed into five groups (blocks) of three animals. Each goat within the group was allocated to one of treatments: 25:75 (V: C), 50:50 (V: C) and 75:25 (V: C) of *ad libitum* intake. Goats were housed in individual metabolic cages. During a digestion trial, feed intake, feed refusals, faeces and urine were collected during 6-d after 20-d adaptation period. Samples were dried and gross energy (GE) was determined using a Parr calorimeter. The measurements of methane emission were performed using the sulphur hexafluoride (SF₆) tracer technique and analyzes were conducted at Embrapa Environment (CNPMA). Data were analyzed as a complete randomized block design using mixed models with fixed effect of treatment and random effect of blocks and error, using the MIXED procedure of SAS (version 9.2). There was no significant difference ($P < 0.05$) for daily methane emission among treatments. Digestible energy (13.64, 12.35 and 12.97 MJ kg⁻¹ of dry matter, DM, $P = 0.09$), metabolizable energy (12.19, 10.78 and 11.22 MJ kg⁻¹ DM, $P = 0.06$), and methane losses (5.5%, 6.2% and 6.4% of GE intake, $P = 0.63$) did not differ among treatments 25:75, 50:50 and 75:25, respectively Metabolizability(q) was greater ($P = 0.02$) for 25:75 treatment (0.73) compared to others (0.65 and 0.65). Our results suggest that methane emission of goats fed at maintenance level is not affected by forage:concentrate ratio of diet.

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