

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

ENERGY PARTITION BY GROWING GOATS FED ENCAPSULATED CALCIUM NITRATE

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Encapsulated calcium nitrate (ECN) has been studied in the last years as a source of non-protein nitrogen (NPN) and represents an alternative route to sink free hydrogen in the ruminal environment, reducing the emission of methane and probably improving the energy efficiency. The aim of this study was to assess the impact of ECN as a substitute for soybean meal in energy partition of Saanen male goats. Twelve castrated male growing goats (21.9 kg ± 3.19 kg of initial body weight) were used in four 3 x 3 latin square (LS) during three 48-d periods. Goats were grouped by body weight (BW) within each LS and randomly assigned to one of three diets: SBM – control based on soybean meal (SBM) – 75 g/kg of SBM on DM basis; ECN12.5 – 12.5 g/kg of ECN on dry matter (DM) basis; ECN25 – 25 g/kg of ECN on DM basis. Each period lasted 21 days for adaptation, five days for metabolism trial (d 22 to d 26) and 15 days for indirect calorimetry trial (day 27 to day 38). Between periods, a washout period was provided for 7 days during which the control diet was fed. The gross energy intake (GEI), digestible energy intake (DEI) and metabolizable energy intake (MEI) showed a quadratic effect ($P < 0.05$). The energy lost as methane reduced linearly ($P = 0.06$) and the urinary energy showed a quadratic effect ($P = 0.09$) showing their highest at the inclusion of 12.5 g ECN /kg DM. The heat production (HP) was not influenced by treatments ($P = 0.91$); but fast heat production (FHP) was 22% ($P < 0.05$) lower in ECN25 compared to SBM. The emission of methane reduced 0.21 g for each g of nitrate intake showing an interaction between nitrate consumption and methane production. The ECN inclusion decreases FHP, which might spare energy for other animal's usage. The inclusion of 9.5 g/kg of ECN on DM results in a maximum DE and ME intake.

Keywords: greenhouse gas, indirect calorimetry, methane

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