

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

EFFECT OF TEMPERATURE IN THE DIGESTIBILITY AND NUTRIENTS OXIDATION OF SAANEN AND ANGLO NUBIAN GOATS

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The aim of this study was to determine the influence of the temperature on the consumption, nutrient digestibility and nutrient oxidation in Saanen and Anglo Nubian goats using the indirect open circuit respirometry technique. Six non-lactating and non-pregnant goats of Saanen breed (53.3 ± 7.7 kg) and six goats of Anglo Nubian breed (56.4 ± 8.0 kg) were used, randomly distributed in metabolic cages and fed *ad libitum* with a diet composed of 90% corn silage and 10% concentrate, based on the dry matter (DM) formulated according to the recommendations of the NRC (2007) for adult females in maintenance. The goats were submitted to three different temperatures: $10 \text{ }^\circ\text{C} \pm 0.23$, $20 \text{ }^\circ\text{C} \pm 0.41$ and at $35 \text{ }^\circ\text{C} \pm 1.05$. Data were analyzed as a completely randomized design and the declared significance level was 10%. When significant, the temperature effect was decomposed into two orthogonal polynomial contrasts. When the interaction between temperature and breed was significant, the effect of breed at each temperature was performed using the SLICE option of SAS LSMEANS. For both breeds, there was a linear decrease in the intake of DM (DMI) and OM (OMI), as the temperature increased from 10 to 35 °C, so that the DMI decreased by $0.44 \text{ g / kg}^{0.75} \text{ PV}$ for each increase of 1°C. For both breeds, dry matter (DM) and organic matter intake (OM; $P < 0.10$) decrease linearly with increasing temperature from 10 to 35 °C. The apparent digestibility of DM, OM, crude protein and neutral detergent fiber presented quadratic behavior ($P < 0.10$), with the lowest values at 20 °C. At 35 °C, the crude protein digestibility of Anglo Nubian goats was higher than that of Saanen goats. The results obtained for nutrient oxidation were based on the individual measurement during 12 hours of gas change and the mean values of N (nitrogen) excretion collected during 5 days with the calorimetry study. No significant difference was observed for POX (protein oxidation) or CHOOX (carbohydrate oxidation) however significant differences were observed for FOX (fat oxidation) in relation to temperatures. The same trend was obtained when the POX was represented as %HPx (heat production). The increase in temperature leads to lower consumption, tending to negative energy balances. Above 20 °C, goats tend to decrease heat production, as an attempt to conserve energy in hot environments.

Keywords: energy metabolism, facemask respirometry, heat production

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