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TICK RESISTANCE AND HEAT TOLERANCE IN CATTLE III. SWEATING RATE[1]

RESISTÊNCIA AO CARRAPATO E TOLERÂNCIA AO CALOR EM BOVINOS III. TAXA DE SUDAÇÃO

CECÍLIA J. VERÍSSIMO[2], LUCIANA M. KATIKI[2], LUCIANDRA M. TOLEDO[2], FERNANDA F. PESSOA[3], SELMA M. D'AGOSTINO[3], ISABEL K. F. MIRANDA SANTOS[4]

[1]Financial support: Fapesp 2011/08274-7;
[2]Instituto de Zootecnia (IZ), Agência Paulista de Tecnologia dos Agronegócios (APTA), Secretaria de Agricultura e Abastecimento do Estado de São Paulo (SAA), Rua Heitor Penteado, 56, Centro, CEP 13460-000, Nova Odessa, SP, Brazil.E-mail: cjverissimo@iz.sp.gov.br;
[3]Post graduation (MS) in Sustainable Animal Production, Instituto de Zootecnia;
[4]Department of Bioquímica e Imunologia FMRP/USP, Av. Bandeirantes, 3900, CEP 14049-900, Ribeirão Preto, SP, Brazil.

Cattle in a sustainable tropical livestock should be heat tolerant and resistant to ticks. The relationship between *Rhipicephalus (Boophilus) microplus* infestation and sweating rate, an important heat tolerance characteristic, was studied in six Nellore and four Holstein steers of seven-month-old. They were artificial infested (a.i.) with 10,000 (Holstein) and 20,000 (Nellore) larvae in 16/Apr/2011. In days 20, 23 and 24 after the infestation, the 10 bigger females ticks found in whole animal were weighed and put in a chamber (27 ^{o}C and 80% RH), weighing the egg mass of each female tick fourteen days after. The sweating rate (SR_{skin}, measured by Scheleger and Turner, 1963, method, in a shaved area of shoulder skin) was evaluated in 14/Apr (2 days before the a.i.) and in 05/May (19 days after a.i.). In 14/Apr the Scheleger and Turner, 1963, method was done on the coat not shaved (SR_{coat}). The sweating rate was measured in the afternoon (from 2 P.M.), after 30 minutes of direct sunlight, on April. On May, the animals remained 60 minutes in direct sunlight because this day was colder. The experimental design was a non-probability sample restricted to the 10 available animals. Data from the steers' sweating rate were analyzed using the General linear models of the SPSS® statistical package (version 12.0) using SR_{skin} as dependent variable and breed and sampling date as independent variables. For SR_{coat} breed was the independent variable. Nellore, a tropical cattle breed, had higher SR_{skin} (1,000.82 ± 64.59 g m^{-2} h^{-1}, P< 0.001) than Holstein (620.45 ± 79.10 g m^{-2} h^{-1}). SR_{skin} was higher on May (1,187.33 ± 71.49 g m^{-2} h^{-1}, P< 0.001) than on April (433.93 ± 71.49 g m^{-2} h^{-1}). The correlation between the two different measurements of SR was positive and significant (r= 0,545, P<0,01, Pearson correlation). But in SR_{coat} the breed effect disappeared because the Holstein SR_{coat} increased (Holstein: 884.95 ± 472.12 g m^{-2} h^{-1} and Nellore: 1,060.72 ± 318.21 g m^{-2} h^{-1}, P > 0.05). This indicates that the sweat increased the fur's humidity of Holsteins and consequently diminished the sweating rate difference between breeds. Perhaps, this humidity in the coat could be favorable for the surviving of the tick hidden from direct sunlight below the hairs, on the skin. Ticks, especially larvae, are very sensitive to desiccation from direct sunlight. On May, the SR_{skin} was negatively correlated with the egg mass (r= -0.713, P < 0.05), probably because of the Nellore cattle. They sweat more and are more tick resistant, having lesser ticks which lay fewer eggs. Nellore cattle is a sustainable breed for the tropics because they are heat tolerant and tick resistant.

Key words: coat, egg mass, Holstein, Nellore, *Rhipicephalus microplus*, shaved.