



INFLUENCE OF GROOMING ON *Rhipicephalus microplus* TICK INFESTATION AND SERUM CORTISOL RATES¹

INFLUÊNCIA DA AUTOLIMPEZA NA INFESTAÇÃO PELO CARRAPATO *Rhipicephalus microplus* E NÍVEIS DE CORTISOL SÉRICO

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Grooming is an important factor on animal resistance to ticks. *Rhipicephalus microplus* is the most pathogenic cattle tick in Brazil causing death in susceptible animals. Cortisol is the hormone of stress. The influence of grooming on tick infestation and serum cortisol level was studied in 16 Holstein heifers from fifth to eight-month-old. They were infested with 10,000 larvae in June/20/2011. Half of them used a necklace made of wood strips and had an infestation chamber made by cotton cloth covering about 50 cm diameter of the shaved flank, fixed at the skin in both sides with adhesive to prevent larvae to escape from the infestation chamber and the amount of larvae was divided into the two chambers. Such artifacts had the purpose to avoid grooming. The heifers remained all the tick parasitic life cycle in individual pens inside a closed shed at Instituto de Zootecnia, in Nova Odessa, São Paulo State. Tick females bigger than 4.5 mm were counted in the right side from day 20 to 22 after the artificial infestation. The tick recovery rate was calculated by adding and multiplying by two the number of ticks counted, assuming that 5,000 female larvae had infested the cattle. Immediately before infestation (day 0) and in day2, day8, and day17 after infestation, blood samples were collected using vacuum tubes, in the morning (8:30 – 10:00 A.M.). Cortisol was measured by immunoassay (EIA) and the D.O. (optical density) at 420 nm was converted in ng of cortisol/mL of serum sample. The experimental design was randomized with 8 replications. Data from serum cortisol were analyzed using the General linear models of the SPSS® statistical package (version 12.0) using the presence of the artifacts (necklace and chamber) and sampling day as independent variables and serum cortisol as the dependent variable. In the analyse of tick recovery rate, the presence of artifacts was the independent variable and tick recovery rate the dependent variable. The presence of chamber and necklace did not affect the cortisol level, although they had prevented grooming. Consequently, animals with the artifacts had more ticks than the ones with no artifacts (34.56% versus 14.9% tick recovery rate, $P < 0.05$). The last blood sample collection had revealed an increase on the cortisol level, coinciding with the final parasitic life cycle of *R. microplus* (Table 1). No significant correlation were detected between cortisol levels and the tick recovery rate. Grooming is important to decrease the cattle tick infestation, but its limitation presented in this study, did not elevate the serum cortisol level, related to animal stress.

Key words: cortisol, grooming, infestation, *Rhipicephalus microplus*, tick.

Table 1. Serum cortisol level (ng of cortisol/mL) of Holstein heifers with (H with) or without (H without) artifacts to prevent grooming

	Day 0	Day 2	Day 8	Day 17	Mean
H with	584.37 ± 615.92	262.06 ± 135.56	446.44 ± 279.64	668.63 ± 619.83	490.38 ± 478.37
H without	271.75 ± 123.25	233.81 ± 130.20	446.31 ± 287.41	627.25 ± 284.99	394.78 ± 267.36
Mean	428.06 ± 464.90ab	247.94 ± 131.53b	446.38 ± 278.94ab	647.94 ± 475.01a	

Means followed by different letters in the row differ significantly ($P < 0.05$)