The aim of this study was to evaluate the relationship between testicular lesions and hormone levels in rats experimentally infected with Trypanosoma evansi. For that, the measurement of reproductive hormones, histopathology and biomarkers of cellular injury were carried out in twenty-four animals, which were divided into two groups with 12 animals each. Group A was the negative control, or uninfected, while group B was composed by animals infected with T. evansi. Both groups were divided again into two other sub groups (n=6), from which serum and testicular fragments were collected on days 5 (A1 and B1) and 15 (A2 and B2) post-infection (PI). The morphological analysis showed increased alterations of head and tail of sperm in infected rats when compared with those of the control group. A significant reduction (P<0.01) in the levels of LH, FSH, testosterone and estradiol, associated with an increase in cortisol, was observed in serum of group B when compared with negative control. Additionally, NOx, lipid peroxidation and protein oxidation were enhanced in testicles, indicating the occurrence of cellular lesion. On histopathology, it was possible to observe testicular degeneration, among other disorders in infected animals. Therefore, based on these results, it is possible to conclude that the experimental infection with T. evansi caused changes in the levels of the main hormones of male rats associated with cellular injury.

**Keywords**
Protozoa, Wistar rats, testicular lesion, reproduction, oxidative stress.