

Infertility is a late consequence of *Besnoitia besnoiti* infection

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Abstract

Besnoitia besnoiti, an obligate intracellular protozoan parasite, is the causal agent of bovine besnoitiosis. In this work bulls presenting cysts in the skin but without any other symptomatic manifestation of disease were used to address bovine fertility in a early stage of infection. Therefore seminal parameters pre and post-thawing, *in vitro* fertilization and embryo rates between asymptomatic infected (n = 3) and uninfected (n = 5) bulls were evaluated. Skin biopsies were submitted to histopathological analyses to identify *B. besnoiti* cysts in sires. Semen was collected by electroejaculation and sperm quality parameters before cryopreservation and after thawing were analyzed using ANOVA. The quality of semen collected from the two groups

of bulls presented no differences before cryopreservation. From all the sperm post-thawed quality parameters evaluated (motility and hypoosmotic swelling test (Host); post-swim-up motility, activity, concentration and agglutination; fertilization and embryo rates) only post-thawed (51.0 ± 36.3 vs $42.3 \pm 10.6\%$, $P=0.05$) and post-swim-up (36.3 ± 18.8 vs $25.1 \pm 12.0\%$, $P=0.009$) motility were significantly different between asymptomatic infected and uninfected bulls, respectively.

Although this work suggests infertility is a late consequence of *B. besnoiti* infection, the presence of animal carriers in farms is a potential transmission factor of the disease. Nevertheless, semen cryopreservation of infected valuable bulls could be considered for future use on a farm level.