

Resveratrol ameliorates pathophysiological changes associated with *Brucella melitensis* infection in dexamethasone-treated does

ABSTRACT

Brucellosis has been regarded as the most widespread zoonotic disease. Infected animals have always been the source of human infection. Studies on the influence of stress on the pathological dynamics of this zoonotic disease are uncommon. This study aimed at evaluating serological responses, oxidative status, and pathological derangements associated with *Brucella melitensis* infection in does treated with dexamethasone. Twelve does were divided into 4 groups designated A, B, C, and D with 3 animals each. Groups A and B were ocularly inoculated with 10⁷ CFU of *B. melitensis*. From day 21 postinoculation (pi), dexamethasone was administered for 7 days at 2 mg/kg intramuscularly. Group A was further treated with resveratrol for 5 days from day 31 post-*B. melitensis* inoculation. Group C was inoculated with similar dose of *B. melitensis* ocularly while group D was inoculated normal saline. Blood samples were collected at regular intervals for PCR, serology, and oxidative stress analysis. The does were sacrificed at day 42 pi. Selected tissues were collected for immunohistochemistry and histopathological examination. Dexamethasone administration induced increase in malondialdehyde level, intensity of immunostaining, and pathological alterations while decreasing superoxide dismutase, and glutathione levels in group A compared to group B. Five-day treatment with resveratrol following dexamethasone administration was observed to significantly ameliorate pathological derangements compared to group A. While stress could exacerbate pathological alterations associated with *B. melitensis* infection, antioxidants are capable of mitigating the impact of stress associated diseases.

Keyword: *Brucella melitensis*; Dexamethasone; Oxidative stress; Resveratrol; Immunohistochemistry