

Development and application of dot-enzyme-linked immunosorbent (dot-ELISA) assay for detection of *Brucella melitensis* and evaluation of the shedding pattern in infected goats

ABSTRACT

Early and accurate diagnosis of *Brucella melitensis* is essential for the treatment and control of brucellosis both in animals and humans. The thrust for the development of a rapid diagnostic technique to overcome the limitations of conventional microbiological and serological tests brought about this investigation on the development and application of dot-ELISA for antigen and antibody detection in infected goats. Fifteen apparently healthy Boer aged 2–3 years which tested negative for brucellosis using PCR and ELISA, were grouped into A (10 goats infected intraocularly with 10⁷ CFU of *B. melitensis*) and B (5 goats) as control. Discharges (ocular, nasal, and vaginal) and blood were collected at days 3, 7, 10, 14, weekly until 42 post-infection (pi) for dot-ELISA, PCR, and RBPT. Dot-ELISA detected *B. melitensis* antigen and antibody in group A at day 3 and 7 pi, respectively with adequate sensitivity and specificity relative to PCR and RBPT. The bacteria shedding detected from discharges at day 3 pi in the nasal and ocular route with dot-ELISA. Group B were consistently negative. Values such as speed, simplicity, field adaptability, high sensitivity, and specificity make dot-ELISA a rapid and adequate technique for diagnosis of brucellosis in *B. melitensis* infected goats within few hours.

Keyword: *Brucella melitensis*; Dot-ELISA; Diagnosis; Shedding pattern