

## **Antigenic distribution, pathological changes, antibody response and serological detection in non-pregnant goats following experimental infection by *Brucella melitensis***

### **ABSTRACT**

This study describes the pathological changes, antibody response, isolation and distribution patterns following exposure of non-pregnant goats to live *Brucella melitensis*. Eighteen healthy adult female goats were divided into two equal groups. Group 1 was infected via conjunctival sac with 10<sup>9</sup> cfu/ml of *B. melitensis*, while Group 2 was similarly exposed to sterile PBS. Serum and swabs from the eyes and vagina were collected at 5-day intervals. On days 15, 30 and 75 post-infection, 3 goats from each group were killed before the conjunctiva, ovary, oviduct, uterine horn, uterine body and vagina, the submandibular, prescapular and supramammary lymph nodes, the mammary gland, liver, spleen, urinary bladder and synovial membranes were collected for bacterial isolation and pathological study. Exposure of non-pregnant goats to *B. melitensis* did not produce clinical signs and gross lesions but produced mild necrosis and inflammation in the lymph nodes, the organs of reproductive tract, the mammary gland and urinary bladder. In general, microscopic lesions were most severe in the D75 goats, followed by D30 and D15 goats. *Brucella melitensis* was most frequent and significantly ( $p < .05$ ) isolated from the D30 ( $64.4 \pm 25.2\%$ ) and least from D15 goats ( $39.3 \pm 26.0\%$ ) goats. The organs that were most frequently isolated were the uterus, followed by the mammary gland, supramammary lymph node and urinary bladder. Earliest isolation from the ocular swabs was on day 5, while the vaginal swabs were on day 20 post-infection. The antibody response showed first significant ( $p < .05$ ) increase on day 15 and reached peak on day 45 post-infection, corresponding with the first detection of sero-converter goats by the RBPT at 15 days and by the CFT at 40 days post-infection. In conclusion, infected non-pregnant goats shed *B. melitensis* through the vagina by day 20. The sero-positive goats were detectable by RBPT after 15 days but by CFT after 40 days. Since both serological tests detected positive goats at different time period of infection, paired-serum samplings might reduce this discrepancy.

**Keyword:** *Brucella melitensis*; Bacterial isolation; Goats; Pathology; Serology