

Sensitivity and specificity of in-house rose bengal plate test for the detection of brucellosis antibody in cattle, sheep, and goats

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ABSTRACT

Introduction: Brucellosis is a disease that can infect both livestock and humans through consuming contaminated products. This bacterial infection can lead to various health issues such as infertility, recurrent fever, orchitis in men, or miscarriage in pregnant women. Since 2018, the Malaysian Veterinary Protocol (PVM) has outlined that livestock should be screened using the Rose Bengal Plate Test (RBPT). Currently, commercial RBPT kits are being used by field veterinary authorities for screening purposes. The Veterinary Research Institute (VRI) has also undertaken small-scale RBPT antigen production to assess technical capability in producing good performance of RBPT in-house antigens. **Objective:** To evaluate diagnostic sensitivity and specificity of the in-house RBPT antigen in cattle, sheep, and goats. **Materials and Method:** A total of 340 cattle sera, 232 goat sera and 153 sheep sera were subjected to testing with the in-house RBPT and CFT following the DVS Manual for Serology Laboratory. The antigens used in all assays are *Brucella abortus* S99 and *Brucella melitensis* M16. The specificity and sensitivity of each RBPT test were evaluated against the CFT, considered as the gold standard. **Results:** The result indicated that the sensitivity of the in-house RBPT was 96.70% in cattle, 94.70% in goats, and 90.00% in sheep, respectively. The specificity was 97.20% in cattle, 98.0% in goats, and 98.0% in sheep. False-negative results may occur in the early stages of infection and through the ingestion of colostrum from the reactor dam. False-positive results could be attributed to the cross-reactivity of antibodies to *Yersinia enterocolitica* type 0.9 and *Escherichia coli* 0:157H. **Conclusion:** In conclusion, the in-house RBPT demonstrated very good specificity in all three species, however, the assay exhibited lower sensitivity in sheep compared to cattle and goats, which showed good sensitivity