Comparison of PCR assay with serum and whole blood samples of experimental trials for detection and differentiation of Brucella melitensis.

Abstract

Brucellosis poses a significant animal and public health problem in many developing countries and requires fast and accurate diagnosis. A PCR assay amplifying part of the Brucella melitensis specific IS711 gene was developed and applied to mice clinical samples on an experimental trial. Over an 8 week period of infection, whole blood and serum were examined from 78 experimental mice, with a total of 60 samples from B. melitensis infected mice and a group of 96 control samples from mice inoculated with Brucella abortus 544, Yersinia enterocolitica O:9 and Brucella broth. Regardless of date of infection, the sensitivity of whole blood and serum based PCR assay with samples from B. melitensis infected mice was found to be 100% (30/30) and 83.3% (25/30), respectively. Serum samples collected at 60 days post infection (p.i) of B. melitensis failed to show a positive result. An amplicon of 252 bp was obtained in all PCR positive samples. All samples obtained from the control groups tested negative, conferring an assay specificity of 100%. These results show that the use of serum-PCR may lead to assay simplification and shorten turnaround time, but the optimal clinical specimen for this test was not serum but whole blood, which leads to maximum assay sensitivity

Keyword: Brucella; IS711; Mice; PCR; Serum; Whole blood.