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Molecular Characterization of *Brucella abortus* and *Brucella melitensis* in Cattle and Humans at the North West of Pakistan

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Abstract

Brucellosis is a fatal zoonotic disease caused by members of the genus *Brucella*, resulting in significant reproductive losses in animals. The present study was designed to evaluate the prevalence of *Brucella abortus* and *Brucella melitensis* by screening the serum of the blood samples through Serum Plate Agglutination Test (SPAT) assay and by duplex PCR. Blood samples were randomly collected from cattle (n=200) and human (n=200), and were placed in two groups with respect to their contact (direct and indirect) with cattle. The overall prevalence of brucellosis in cattle and human through SPAT assay was 15 and 6%, respectively. Amongst human, the prevalence was 10% in female and 2% in the male. The high rate of infection was found in females than males due to their frequent contact with cattle compared to males in the study area. Molecular diagnosis using duplex PCR showed 13 and 4% prevalence of brucellosis in cattle and human, respectively. The duplex PCR revealed 6 and 2% positive cases in female and male, respectively ($P>0.05$). Collectively, these results suggested a high prevalence of the diseases in humans (females) having direct contact with cattle. Furthermore, the results infer that the optimized PCR approach is more efficacious, specific and reliable compared to the routine conventional SPAT assay.

Key words: Brucellosis, Duplex PCR, Prevalence, SPAT, Zoonosis



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