IMMUNOGENICITY AND ANTIGENICITY OF *BRUCELLA* RECOMBINANT OUTER MEMBRANE PROTEINS

Aitbay Bulashev[1], Tadeusz Jakubowski[2], Kanat Tursunov[1], Vladimir Kiyan[1], Aibek Zhumalin[1]

[1]S.Seifullin Kazakh Agro-Technical University, Zhenis avenue, 62, 010011, Astana, Kazakhstan
[2]Warsaw University of Life Sciences, Nowoursynowska street 159, 02-776, Warsaw, Poland

Correspondence: Aitbay Bulashev, Department of Microbiology and Biotechnology,
Faculty of Veterinary Medicine and Livestock Technology,
S.Seifullin Kazakh Agro-Technical University, 010011, Astana, Kazakhstan,
E-mail address: aytbay57@mail.ru; Phone number: +77015168406

Abstract. Classical serological tests for diagnosing bovine brucellosis are mainly based on the detection of antibodies directed against the smooth lipopolysaccharides (S-LPS) of *Brucella* cell membrane, which could give false positive results because of cross-reactivity with other Gram-negative bacteria. Therefore, there has been an ongoing search for non-LPS candidate antigens for the diagnosis of brucellosis, and several *Brucella* recombinant outer membrane proteins (rOmps) have been identified as targets of antibody response. Here, *Brucella* rOmp25 and rOmp31 were expressed in *E. coli* using prokaryotic pET32 and/or pET28+ expression vectors. BALB/c mice were used to study immunogenicity of these rOmps. The antigenicity of the rOmps, as well as soluble protein preparations (CSP) of *B. abortus* and *B. melitensis* were examined by indirect enzyme-linked immunosorbent assay (i-ELISA) on sera samples from 44 cattle that were positive for brucellosis by agglutination test (AT) and complement fixation test (CFT). The rOmps triggered distinct immune response in mice in the form of antibody production. Antisera to rOmp25 and/or rOmp31 reacted with homologous proteins and also showed mutual cross-reactions, which demonstrate similarity of the epitopes of these antigens. The i-ELISA based on CSP of *B. abortus* and *B. melitensis* indicated the presence of antibodies in 68.2% and 59.5% of seropositive cattle, respectively. Using rOmp25 and rOmp31 as coating antigens indicated the presence of specific antibodies only in 52.3% and 36.4% of cows with positive results by conventional serological tests, respectively. The results of this study suggested that *Brucella* rOmp25 is a promising antigen in serological diagnosis of bovine brucellosis. Further analysis will be necessary to define more precisely the value of this study, as the results of serological tests have not been verified by bacteriological method.

Keywords: brucellosis, recombinant Omp's, serology, ELISA