Abstract

In this report, a novel gene encoding an interspersed repeat antigen from Babesia microti (BmIRA) was identified and described. The full-length cDNA containing an open reading frame of 1,947 bp was obtained by immunoscreening a B. microti cDNA expression library. The full-length of BmIRA gene was expressed as a GST fusion recombinant BmIRA (rBmIRA) in Escherichia coli. Sera of mice immunized with the rBmIRA detected a native parasite protein with a molecular mass of 76 kDa on Western blot analysis. The same protein was detected in the parasites by immunofluorescent antibody test (IFAT). An enzyme-linked immunosorbent assay (ELISA) using rBmIRA detected specific antibodies as early as 11 days post-infection in sera from a hamster experimentally infected with B. microti Gray stain (US type). Furthermore, a rapid immunochromatographic test (ICT) using rBmIRA detected specific antibodies in a hamster experimentally infected with B. microti from day 11 to at least day 180 post-infection. The results indicate the antibody response against the rBmIRA was maintained during the chronic stage of infection. On the other hand, an immunoprotective property of rBmIRA as a subunit vaccine was evaluated in hamsters against B. microti challenge, but no significant protection was observed. Our data suggest that the immunodominant antigen BmIRA could be a useful serodiagnostic antigen for screening of B. microti infection.