

Babesia gibsoni: Serodiagnosis of infection in dogs by an enzyme-linked immunosorbent assay with recombinant BgTRAP

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Abstract

The thrombospondin-related adhesive protein of *Babesia gibsoni* (BgTRAP) is known as an immunodominant antigen and is, therefore, considered as a candidate for the development of a diagnostic reagent for canine babesiosis. The recombinant BgTRAP (rBgTRAP) expressed in *Escherichia coli* was tested in an enzyme-linked immunosorbent assay (ELISA) for detecting antibodies to *B. gibsoni* in dogs. The ELISA with rBgTRAP clearly differentiated between *B. gibsoni*-infected dog sera and specific pathogen-free (SPF) dog sera. The sera collected from dogs experimentally infected with closely related parasites, *B. canis canis*, *B. canis oogeni*, *E. canis rossi*, and *Neospora caninum*, showed no cross-reactivity by the ELISA with rBgTRAP. A total of 107 blood samples collected from dogs that had been diagnosed as having babesiosis at veterinary hospitals in Japan were examined for the diagnosis of *B. gibsoni* infection by the ELISA and PCR. Ninety-six (89.7%) and 89 (83.2%), of the tested samples were positive by the ELISA and PCR, respectively, while 11 (10.3%) and 4 (3.7%), were ELISA+/PCR- and ELISA-/PCR+, respectively. In addition, the sensitivity of the ELISA with rBgTRAP was much higher than that of previously established ELISAs with rBgP50, rBgSA I, and rBgP32. These results indicate that the rBgTRAP is the most promising diagnostic antigen for the detection of an antibody to *B. gibsoni* in dogs and that the combined ELISA/PCR approach could provide the most reliable diagnosis for clinical sites.