

## Abstract

A heterologous prime-boost vaccination regime with DNA and recombinant vaccinia virus (rvv) vectors expressing relevant antigens has been shown to induce effective immune responses against several infectious pathogens. In this study, we describe the effectiveness of the prime-boost strategy by immunizing dogs with a recombinant plasmid followed by vaccinia virus, both of which expressed the glutamic acid-rich protein (BgGARP) of *Babesia gibsoni*. The dogs immunized with the prime-boost regime developed a significantly high level of specific antibodies against BgGARP when compared with the control groups. The antibody level was strongly increased after a booster immunization with a recombinant vaccinia virus. Two weeks after the booster immunization with a recombinant vaccinia virus expressing BgGARP, the dogs were challenged with *B. gibsoni* parasite. The dogs immunized with the prime-boost regime showed partial protection, manifested as a significantly low level of parasitemia. These results indicated that this type of DNA/rvv prime-boost immunization approach may have use against *B. gibsoni* infection in dogs.