

ABSTRACT

PRELIMINARY EVALUATION OF THE EFFICACY OF *BRUCELLA ABORTUS* STRAIN RB51 VACCINE IN DOMESTIC WATER BUFFALO (*BUBALUS BUBALIS*)

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The study was conducted to determine the kinetics of the *Brucella abortus* RB51 vaccine in domestic water buffalo (*Bubalus bubalis*). No commercially available *Brucella* vaccine has proven efficacy in water buffalo. Thirty water buffalo were obtained from a brucellosis-free farm to evaluate responses to differing vaccination protocols using *B. abortus* strain RB51 (SRB51) commercial vaccine. The animals were randomly divided into five treatment groups. Groups I to V received the recommended dose of commercial SRB51 vaccine (RD), RD twice 4 weeks apart, double RD, double RD twice 4 weeks apart and saline, respectively. Immune responses were monitored up to 27 post-inoculation week (PIW). Buffered plate agglutination test and competitive enzyme-linked immunosorbent assay (ELISA) were persistently negative confirming the inability of these conventional tests to detect SRB51 vaccinates. Histological studies of lymph node sections demonstrated a B-cell response. The overall specificity and sensitivity at 12 PIW for the complement fixation test (CFT) was 100% and 92% and for the dot-blot assay was 95% and 91% respectively. Gamma interferon (IFN- γ) assay was used to assess *in vitro* cell-mediated immune response to SRB51 on stimulated peripheral and lymph node mononuclear cells and had an

overall specificity of 67% and a sensitivity of 79%. SRB51 was not recovered from mucosal surfaces and no vaccine related adverse clinical signs were observed up to 12 PIW. Clearance of SRB51 from the prescapular lymph node was evaluated by bacteriology and immunohistochemistry. At 2 PIW, SRB51 was isolated from 1 water buffalo in both RD and double RD treatments. SRB51 was also recovered from all water buffalo in the RD treatment that were sampled at 4 and 6 weeks PIW (n=2/time). Results of this study provide new data on SRB51, recommendations for vaccination against brucellosis which may aid in the preservation of genetic variability of the water buffalo.

Keywords: Michael Diptee; *Brucella abortus*; vaccination; kinetics.