

The effect of dexamethasone on immune responses of calves to intranasal exposures to live attenuated *gdhA* derivative of *Pasteurella multocida* B:2

ABSTRACT

The effect of stress, created using dexamethasone on immune response by calves to intranasal exposures to *gdhA* derivative of *Pasteurella multocida* B:2 was studied. For the purpose of this study, twelve calves of 6 months old were selected and divided into 4 groups. At the start of the experiment, calves of groups 1 and 2 were intramuscularly injected with dexamethasone at the rate of 1 mg/kg body weight for 3 consecutive days. Then, the calves of groups 2 and 3 were exposed intranasal to 5 ml of the inoculums containing 10⁶ cfu/ml of the *gdhA* derivative of *P. multocida* B:2. Calves of groups 1 and 4 remained unexposed control. Serum samples were collected prior to the start of the experiment and at weekly interval for a period of 7 weeks. At the end of the 7-week period, all the calves were sacrificed before the lungs were lavaged using 1 L of sterile phosphate buffered saline (PBS). The sera and lung lavage fluid were subjected to ELISA to determine the levels of IgG and IgA. Significant increase in both serum and lavage IgG and IgA were observed only in group 3, which were exposed without any dexamethasone treatment. The dexamethasone-treated and exposed group 2 failed to respond to the exposures when the levels remained insignificant to those of the control untreated and unexposed group 4. The calves of group 1, which were treated with dexamethasone but remained unexposed, failed to show any response at all. In conclusion, intranasal exposures to live attenuated *gdhA* derivative of *P. multocida* B:2 must be given only to unstressed calves, since stressful condition has been found to prevent calves from responding significantly to the antigen.

Keyword: bacterial diseases; Calves; Dexamethasone; Exposure; IgA; IgG; Immune response; Live vaccines; Strains; Stress; Stress response