

Abstract:

Historically, bighorn sheep (BHS) were abundant in North America, but their numbers have dwindled over the years due to loss of habitat, competition for forage with domestic livestock, over-hunting, and diseases. Of these, the most important factor limiting the growth of bighorn sheep populations is pneumonia. *Mannheimia haemolytica* is an important etiological agent of pneumonia in BHS. Leukotoxin (Lkt) produced by *M. haemolytica* is the major virulence factor of this organism. Some herds of BHS sheep appear to be relatively less susceptible to pneumonia than others. In this study, we attempted to test the hypothesis that BHS with high titers of *M. haemolytica* Lkt-neutralizing antibodies are less susceptible to *M. haemolytica* pneumonia. Serum samples from two herds with a history of pneumonia were to be compared with serum samples from two herds which had apparently no deaths due to pneumonia in the past ten years. However, we were able to test serum samples from only one herd without a history of pneumonia and two herds with a history of pneumonia. The total antibody titers to Lkt were evaluated by an indirect ELISA, and Lkt-neutralizing antibody titers were evaluated by the MTT dye-reduction cytotoxicity assay. The results from these assays revealed no significant difference in total anti-Lkt antibody titers or Lkt-neutralizing antibody titers in serum samples from these three herds. Serum samples from a larger number of herds with and without a history of *M. haemolytica* pneumonia need to be tested to determine the role of Lkt-neutralizing antibodies in protection against *M. haemolytica* pneumonia.