Development of recombinant vaccine against tick fever disease based on chimeric protein of *Babesia* sp and *Anaplasma marginale*, associated with nanoparticles adjuvants - Gaspar E.B.[1]*, Santos L.R.[2], Araújo F.R.[2], Gomes C.C.G.[1], Lincopan N.[3], Brandão H.M.[4], Rosinha G.M.S.[2]

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Cattle tick borne diseases are transmitted by *Riphicephalus* (*Boophilus*) *microplus.* The etiological agents of these diseases are the protozoa *Babesia bovis, B. bigemina* and the rickettsia *Anaplasma marginale.* These diseases cause enormous annual economic losses in Brazilian beef cattle production, especially in areas of enzootic instability, as in Brazilian South and Southeast Region. Although a vaccine against these agents is currently commercially available in Brazil, it is produced with live attenuated microorganisms and presents innumerous disadvantage. This project aims the development of a new vaccine against babesiosis and anaplasmosis based on a chimeric protein and new adjuvants. A chimeric protein formed by *Anaplasma marginale* VirB9 and Virb10 protein and *B. bigemina* P0 protein will be constructed by genetic engineering. The chimeric gene will be included in a clone vector plasmid that will be used to transform *E. coli* DH5α. The gene will be subcloned in an expression vector to transform *E. coli* Rosetta. The protein will be complexed to the adjuvants chitosan and dioctadecyldimethylammonium bromide (DDA) and the physic-chemistry of these interactions will be analyzed. Finally the vaccine preparation will be tested in bovine maintained in the field. These animals will be naturally challenged by contact with ticks. The immunogenicity and protection of the vaccine will be evaluated. The expected results are the achievement of a chimeric protein composed by VirB9, VirB10 and P0, efficient complexation of this protein with the adjuvants chitosan and DDA and good immunogenicity and protection of the vaccine preparation.

Key-words: vaccine, anaplasmosis, babesiosis

Embrapa project number: