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Botulism of Cattle in Brazil, Diagnosis and Vaccination.

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Abstract

Botulism as a Cattle disease in Brazil was first diagnosed in 1969 in the federal state of Piauí. Nowadays the disease can be seen in almost every part of Brazil and occurs mostly in phosphorus deficient areas. The losses can be numerated to a total of 1.5 Billions US Dollar during the last 10 years. The outbreaks accumulate temporally in the rainy season (October to March). During this period the fast-growing and widely used pasture species *Brachiaria* contains very low amounts of phosphorus. Unsupplemented mineral deficiency is followed by osteophagia on carcasses which are not eliminated and therefore serve as a permanent source of intoxication. Other sources for intoxication can be contaminated feeding stuffs such as silage or chicken litter.

Aim of this research work was to determine the predominant type of *Cl. botulinum* and to test three vaccines against the toxin types C and D.

64 samples mainly carcass material and soil on farms where botulism recently occurred and 16 samples of carcasses of no known history of botulism were collected. Diagnosis was realised by mouse neutralisation test. 25 of the collected samples were positive for the presence of *Cl. botulinum*, 24 of the CD toxin complex group and one of type A toxin. Two samples of no known botulism history were positive for *Cl. botulinum* type C.

Vaccination was carried out in 60 animals out of which 15 animals each received the same type of vaccine and 15 served as the negative control. Blood was taken over a period of one year once a month at the beginning and then every second month. The immunologic titre of the vaccinated animals was determined in an ELISA using the toxin of *Cl. botulinum* reference strains as the antigen. Two of the tested vaccines produced a good antibody titre, the third had no measurable response compared to the control group.

The results lead to the assumption that the types C and D are playing a major role in causing botulism in Brazil and that only using an effective vaccine in combination with a good pasture management is helpful to prevent Botulism.

Keywords: Botulism, Brazil