

Research project IZS VE 09/11

Development of an ELISA test for the evaluation of the antibody response to *Clostridium perfringens* and *Clostridium septicum* toxoids in a chicken model

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Necrotic enteritis (NE) and gangrenous dermatitis (GA) are two clostridial diseases of poultry caused by *Clostridium perfringens* and *Clostridium septicum* respectively. The economic impact of NE on the poultry industry has been estimated as approximately two billion US dollars annually and currently the control of this disease is based only on antimicrobial treatments. Recently a new *C. perfringens* toxin, named NetB, has been described and it appears to be strictly related to the occurrence of NE. In gangrenous dermatitis the main virulence factor produced by *C. septicum* is a pore-forming protein called α -toxin, already included as a toxoid in commercial vaccines for ruminants.

The objectives of the present project are:

- to develop a reliable ELISA test for the evaluation of the antibody response against *C. perfringens* NetB toxin and *C. septicum* α -toxins in a chicken model;
- to evaluate the antibody response over time against *C. perfringens* and its toxins in artificially infected chickens.

Favourable results could be used to assess the efficacy of a toxoid based vaccine to prevent necrotic enteritis and gangrenous dermatitis in poultry flocks.

Furthermore the newly developed method for the detection of *C. perfringens* antibodies could represent a useful tool for investigating chicken gut health with respect to farming conditions (i.e. food, environment, genetics, antimicrobial treatments).