

TITLE: INFLUENCE OF DIET ON EXPERIMENTAL INDUCTION OF NECROTIC ENTERITIS IN CHICKENS

AUTHORS: SAITO, A.M.; MENCK, M.F.; SOUZA, M; JUSTINO, L.; DORNELLAS, T.; OBA, A.; BAPTISTA, A.A.S.

INSTITUTION: UNIVERSIDADE ESTADUAL DE LONDRINA, LONDRINA, PR (Rodovia Celso Garcia Cid, Km 380, s/n - Campus Universitário, CEP 86057-970, Londrina – PR, Brazil).

ABSTRACT:

Necrotic Enteritis (EN) is an enteric disease of chickens caused by *Clostridium perfringens* (CP), a gram-positive spore-forming bacilli. It is an infectious disease that results in extense economic losses, such as mortality and reduction of bird weight gain. The ban of antimicrobial growth promoters (AGPs) from animal feeding, increased the number of outbreaks of EN, since AGPs contribute to the intestinal microbial balance. Necrotic enteritis is difficult to reproduce experimentally as some predisposing factors are necessary for developing the disease. These factors are associated with toxin production, co-infections, Immunosuppressive factors and diet quality. The objective of this study was to evaluate the influence of corn and wheat diets for the experimental induction of necrotic enteritis in broiler chickens. For the experimental procedure, 24 broiler chickens were housed at one day of life. The animals were divided into the following treatments; T1 Birds received a diet based on soybean meal (37.1%)/corn (56.5%). T2- Birds were fed with soybean meal (37.1%)/ corn (56.5%) and challenged with CP. T3- Birds received a diet based on soybean meal (29.6%)/wheat (62.5%). T4 - Birds received a diet based on soybean meal (29.6%)/wheat (62.5%) and CP challenged. At the 13th and 14th day of life, the chickens received vaccines against coccidiosis and Bursal disease, respectively. On day 15, the birds were inoculated orally with CP (10⁸ CFU/mL) twice daily. To evaluate gross lesions associated with NE, small intestine was examined. Lesion scores were recorded using the following criteria: 0= no gross lesions, normal intestinal appearance; 1 = thin and flaccid intestinal wall; 2 = 1 to 6 necrotic enteritis pocks - minor ulceration and necrosis of the intestinal wall; 3 = more than 6 pocks of necrotic enteritis; 4 = severe: extensive areas of necrosis and ulceration, layer of fibrin and necrotic debris; 5= dead or moribund: a bird that would likely die within 24 h and has necrotic enteritis lesion score of 2 or more. It was observed in T1 that the birds (6/6) had zero score whereas the birds of T2 had score 1 (1/6); Score 2 (2/6); Score 3 (2/6) and score 4 (1/6). In the T3, it was observed lesions classified as 1 (5/6) and score 2 (1/6), and in T4 it was observed a score of 2 (1/6), a score 3 (4/6) and a score 4 (1/6). It was concluded that the wheat-based diet provided better conditions for the experimental induction of necrotic enteritis in broiler chickens.

Keywords: *Clostridium perfringens*, poultry, diet; intestinal health.