

Use of tannins as an alternative to antimicrobials to control avian necrotic enteritis in poultry production

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Clostridial enteric diseases in poultry are mainly caused by *Clostridium perfringens*. Traditionally, the level of this microorganism in the gut of chickens has been controlled by antibiotics included in the formulation of the feed as growth-promoting factors (GPF) to improve growth and to reduce production costs. In the last years, several countries banned the use of antimicrobials as GPF and thus alternatives should be evaluated. Tannins are polyphenolic compounds present in many plants consumed daily by humans and animals. Previous studies show that tannins from different sources may have antibacterial or antitoxic activity and they are able to prevent the development of clostridial enteric diseases when added into the feed. The aim of this study was to determine the effect of the addition of tannins to assess whether they can be used to control the development of enteric diseases produced by different agents. Two independent trials were carried out in commercial broiler chicken farms located in Santa Catarina, Brazil and Buenos Aires, Argentina. Each trial considered a total of circa 2,000,000 birds under commercial productive conditions. In order to evaluate the effect of tannins on the productive parameters, in each trial chickens from treated farms were provided commercial feed added with a commercial mixture of tannins while in control farms chickens only received regular feed and were considered as control. Different parameters were analyzed including mortality, weight gain and presence of undigested feed in feces. On days 21 and 26, 10 animals were randomly selected from 1 house of each farm and were necropsied. Presence and severity of lesions was recorded using a score ranging from 0 to 5 (0: no lesions; 5: massive necrosis). In addition, histomorphometry was done in different sections of small intestine. In both trials results show that tannins were able to reduce both the frequency and the severity of the lesions. Significant differences between chickens fed with or without tannins were found in the score of lesions observed in the duodenum, jejunum and ileum. Also histomorphometric parameters were improved in chickens that received tannins as additive. These results demonstrate that addition of tannins in the diet of poultry is a promising alternative to antimicrobial GPF and can be used as a strategy to control necrotic enteritis in chickens by reducing clinical signs and impact on production parameters.

Keywords: tannins, poultry, production, enteritis, *C. perfringens*.