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Comparative study on antibiotic and synbiotic as growth promotors using duodenal tissue profiling in broilers

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The poultry sector plays a considerable role in the development and spread of Antimicrobial resistance (AMR) because antibiotics are widely used, frequently for non-therapeutic purposes such as growth enhancement. To mitigate AMR in poultry production, several approaches have been recommended, including minimizing antibiotic usage and encouraging alternative interventions like prebiotics, probiotics, and their combined synergistic applications. In this experiment we step out a new approach to combine both prebiotics and probiotics, known as synbiotics. The present study was conducted on ninety (n = 90) day-old Cobb 400 broiler chicks. The chicks were randomly allocated into three dietary treatment groups viz; Group I (control group), Group II (AGP feed group) and Group III (synbiotic feed group). The aim of this experiment was to explore the duodenal tissue of broiler chicken after supplementation of Antibiotic growth promoter (AGP) and synbiotic with a logical and sequential approach. In synbiotic feed group the height of villous was longest while that of AGP group was similar to control group. Among connective tissue fibers the distribution of reticular fibers were more followed by collagen and elastic fibers. The histochemical reactions were more intense in synbiotic feed group followed by AGP and control group. From this study it can be concluded that the growth of chickens is directly correlated with anatomical structures of small intestine. The synbiotic has beneficial effects on the growth performance, intestinal health and immune function of broiler chickens as compare to Antibiotic growth promotor (AGP) and basal diet group.

Keywords: Antibiotic growth promotor, Goblet cells, Intestine, Villi