XYLANASE SUPPLEMENTATION AFFECTS THE CAECAL MICROFLORA OF BROILERS

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The gut harbours a highly evolved and complex microbial ecosystem containing a vast number of diverse populations. For example, microbes make up approximately 600 g/kg of the wet weight of poultry excreta. The proper feeding of poultry should therefore consider the provision of "correct" substrates for the microflora to keep it stable. Search for natural alternatives to antibiotics is a major research topic in the feed industry due to the ban of feed antibiotics in some countries. An experiment was conducted to examine the effect of xylanase supplementation of a wheat-based diet on Clostridium perfringens, the bacterium responsible for necrotic enteritis, and on the total anaerobes in broilers. Broilers were raised on a commercial starter to d 17 and then were switched to two experimental diets (ME type diet used by Mollah et al., 1983), one of which contained a xylanase (2.5g/kg; supplied by Novo Nordisk). One bird from each treatment was killed every other day to d 39. The total caecal anaerobes and C. perfringens were counted (Figures 1 and 2, respectively).

The number of bacteria in the caeca of broilers fed wheat with or without a xylanase did not differ significantly (P<0.05), but in the control diet they increased from $7 \times 10^9$ to $3 \times 10^{10}$ five days after introduction of the diet, whereas in birds fed the wheat diet with enzyme there was no such increase. The number of C. perfringens increased from about $10^5$ to $4 \times 10^7$ three days after introduction of the diets with a steady decline thereafter, although levels above $10^5$ were maintained in birds fed the control diet. Enzyme inclusion reduced (P<0.05) the number of C. perfringens to less than $10^5$ after d 5, and remained low to the end of the experiment.

The results show that appropriate enzymes in diets based on viscous grains such as wheat appear to modify gut microflora and suppress the number of undesirable organisms such as C. perfringens in the caeca.

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