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BROILER TIP . . .

THE USE OF PROBIOTICS AND PREBIOTICS IN POULTRY FEEDS

Through genetic improvements the productivity of broilers has improved significantly. While this is a good thing for the poultry industry, increased rearing density has concentrated and increased disease challenges making birds more susceptible to various pathogens especially enteropathic microbes such as *E. coli*, *Salmonella* spp., *Clostridium perfringens*, and *Campylobacter* spp. This increased susceptibility has resulted in the use of antimicrobial growth promoters which are primarily used to enhance gut health and control sub-clinical challenges. With increasing public concerns about bacterial resistance to antibiotics, the use of antibiotics in therapeutic or sub-therapeutic doses in poultry feed has been severely limited or eliminated in many countries.

Alternatives

There has long been interest in finding alternatives to antibiotics for poultry production. Resident microbes in the birds' digestive tract have a profound effect on some of the physiological processes of their host. With this in mind, it is important to understand the dynamics of the intestinal microbial ecology of the chicken to find alternatives to antibiotics. Under normal circumstances there is a delicate balance of beneficial and pathogenic bacteria in the gastrointestinal tract (GIT). This is influenced by symbiotic and competitive interactions and relationships. The microbial communities will not only protect the GIT, but also enhance productivity in the host.

The use of probiotics and prebiotics are two approaches that have been examined and can potentially reduce enteric diseases in poultry and also enhance their productivity. These substances have been proposed to assist in the prevention of carcass contamination and improve the immune response in the chicken (Huang et al., 2004). Probiotic and prebiotic foods are by no means a novel approach; in fact, they have been consumed for centuries either as natural components of foods or as fermented foods, e.g. yogurt.

Probiotics have been defined as “a live microbial feed supplement which beneficially affects the host animal by improving its intestinal balance” (Fuller, 1989). The probiotic mode of action is by

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“competitive exclusion”, meaning there is competition for attachment sites in the GIT. The bacteria of the probiotic attach to the intestinal mucosa, thereby forming a physical barrier that blocks the attachment of pathogenic bacteria (Furlan, 2005). They also produce antibacterial compounds and enzymes and stimulate the immune system.

Prebiotics are defined as non-digestible food ingredients that beneficially affect the host by selectively stimulating the growth and activity of one or a limited number of bacteria in the colon (Gibson and Roberfroid, 1995). The most common prebiotics are oligosaccharides which are non-digestible carbohydrates. The way in which prebiotics act is by (1) supplying nutrients to beneficial microbes, or (2) tricking pathogenic bacteria into attaching to the oligosaccharide rather than to the intestinal mucosa. This reduces the intestinal colonization thereby decreasing the incidence of infection in the birds. Because the oligosaccharide is non-digestible, the microbes that are attached will travel along the GIT with the ingesta, and are excreted from the bird along with other undigested food.

Enteric diseases are of major economic concern in the poultry industry. They result in lost productivity, increased mortality in flocks and also potential contamination of poultry products, which leads to human food safety concerns. The use of antimicrobials in poultry feed has been curtailed due to concerns of bacterial antibiotic resistance. Alternatives to the use of antibiotics in poultry feed should be aggressively evaluated under field conditions. Probiotics and prebiotics are good alternative candidates.



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****Consult with your poultry company representative before making management changes.****

“Your local County Extension Agent is a source of more information on this subject”