CPRC Update

YEAST IS NOT LEAST

Yeast-based products can help chickens mount a faster, stronger immune response to disease challenge and may offset the need for traditional antimicrobials used in poultry production. That's the finding of a new study coming out of the University of Manitoba.

Dr. Bogdan Slominski is head of a long-standing research program at the University looking at the animal health effects of novel feed ingredients and enzyme technologies. In the current study, he and his team analyzed corn/wheat distiller's dried grains with solubles (DDGS) and a number of yeast-based products and tested several for their ability to promote the health of broiler chickens. Here's what they found:

Not all are created equal

Yeast products generally are rich sources of specific nutrients and nucleotides (the basic structural units of DNA). There is evidence that many of these products, when fed to poultry, can stimulate the immune system and help set up conditions in the gut that favour beneficial bacteria and exclude certain pathogens. Dr. Slominski's group set out to see which products offered the most benefit. After analyzing eleven products, the researchers decided only four had properties that warranted further study: brewer's yeast from DDGS production, Hi-Yeast 751 (nucleotides), MaxiGen Plus (a nucleotide- and yeast-rich product available from Canadian Bio-Systems Inc.), and Yeast Cell Wall (YCW; components of the yeast organism released upon enzymatic treatment). The researchers applied their expertise and found that the biological activity of several products could be improved by pre-treating them with enzymes. Animal trials were performed during which broiler chicks were fed antibiotic- and coccidiostat-free diets supplemented with DDGS or selected yeast-based products. Birds were fed from day one to day 21-28 depending on the trial. Growth performance and immune status of the birds were examined and compared to that of birds fed diets supplemented with conventional antimicrobials. The researchers noted that live brewer's yeast in the feed can result in decreased body weight gain and feed efficiency; it is therefore recommended that brewer's yeast be inactivated (killed) before including it in poultry rations. Both live brewer's yeast and YCW negatively affected development of the small intestine of the chicks. Hi-Yeast 751, on the other hand, appeared to promote intestinal development. Overall, the selected yeast-based products did not significantly improve the growth performance of broilers in these trials. However it is worth noting that the birds did just as well on diets containing yeast products as they did on diets containing antibiotics and coccidiostats in the absence of disease challenge.

Immunity can be enhanced…

Beyond growth performance, the researchers looked at the ability of yeast-based products to affect immune function. Results indicate that yeast-based products do not stimulate the innate immune system of broiler chickens under non-challenged conditions. This property could be beneficial for the birds because immune system activation in the absence of a microbial challenge comes at a cost in terms of productivity and growth performance. When birds were challenged with *Clostridium perfringens* (a bacterium associated with necrotic enteritis), yeast products were just as effective as traditional antibiotics at minimizing the birds' reaction to the infection, but were not as good as antibiotics at reducing *C. perfringens* counts in the gut. The researchers conclude that traditional antimicrobials more effectively protect birds from Gram-positive bacteria such as Clostridium and that yeast-derived products are more effective against Gram-negative bacteria such as Salmonella.

What's next?

Dr. Slominski continues to explore the use of yeast-derived products and enzyme technology in poultry nutrition. He heads up a project in the current Poultry Science Cluster that, in collaboration with Canadian Bio-Systems Inc., may lead to industry application of new enzyme/yeast supplements that offset the need for traditional antimicrobials.

Funding for this research was provided by CPRC, Poultry Industry Council, Natural Sciences and Engineering Research Council of Canada (NSERC), and Canadian Bio-Systems Inc.

Staff announcement:
In case you haven't heard, Esther Ouellet joined the Ottawa office as Research Administrator. Ms. Ouellet has a wealth of knowledge and experience that will be a great asset to the organization. Her contact information and a brief biography are on our website.

For more details on any CPRC activities, please contact The Canadian Poultry Research Council, 350 Sparks Street, Suite 1007, Ottawa, Ontario K1R 7S8, phone: (613) 566-5916, fax: (613) 241-5999, email: info@cp-rc.ca, or visit us at www.cp-rc.ca.

The membership of the CPRC consists of Chicken Farmers of Canada, Canadian Hatching Egg Producers, Turkey Farmers of Canada, Egg Farmers of Canada and the Canadian Poultry and Egg Processors' Council. CPRC's mission is to address its members' needs through dynamic leadership in the creation and implementation of programs for poultry research in Canada, which may also include societal concerns.