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Bio-Efficacy of Feed Proteases in Poultry and their Interaction with other Feed Enzymes

Source: L.F. Romero and P.W. Plumstead - Danisco Animal Nutrition, DuPont Industrial Biosciences, Marlborough UK
(dated 12/03/2013)

Summary

The most accepted value of the inclusion of exogenous proteases in poultry diets is the improvement of protein digestibility from dietary ingredients. However, effects of exogenous proteases on animal performance do not necessarily reflect the increment in protein digestibility from proteases in vitro and a variety of factors determine the bio-efficacy of the application of proteases in chickens. An accurate prediction of amino acid digestibility improvements in response to dietary enzymes is important to maximise the animal performance response and ensure that the cost of including the enzyme is justified. Overestimation of the digestibility effect of protease on individual essential amino acids relative to other amino acids may limit the benefits of increments on the absorption of dietary protein for animal growth. A lack of understanding of what effects proteases alone or in combination have on the digestibility of individual amino acids may further imbalance the amino acid profile provided by the diet. It has been recently demonstrated that improvements in the digestibility of amino acids following exogenous protease application in broiler diets can be accurately predicted as a linear function of undigested amino acids in the diet. The contribution of specific proteases in combination with carbohydrase enzymes in terms of protein digestibility has been confirmed. Nonetheless, effects of protease on the digestibility of other nutrients such as fat and fibre, may play a role in determining the in vivo response to protease in chickens. Factors like the age of the birds, the gut health status of the animals, and the profile of gut microbial populations appear to affect the response to proteases in animal performance and require further study.

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For further information on the Symposium, feel free to contact:

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