EXOGENOUS ENZYMES IMPROVE FEED DIGESTIBILITY IN YOUNG BROILERS AS WELL AS IN LAYING HENS

P.A. GERAERT, D. FRAPIN and G. UZU

In-feed enzymes, such as xylanase and β-glucanase, are used to overcome the antinutritional effects of soluble non-starch polysaccharides (NSP) in cereals like barley, wheat or rye. Indeed, NSP are known to reduce performance (decreased feed efficiency) and litter quality (sticky droppings and wet litter), particularly with very young broilers. Most producers are reluctant to use high concentrations of these cereals even when supplemented with enzymes during the starting period. Moreover, Bedford and Morgan (1996) suggested that the improvement in feed efficiency with enzyme addition was often greater in the finishing period than in the growing period. Thus, it appeared important to investigate the effect of enzyme addition in relation to age. Furthermore, adult birds are assumed to be able to extract more nutrients from their feed than young birds and may not be expected to respond positively to enzyme supplementation.

Two experiments were designed to study the effect of enzyme supplementation on feed digestibility and apparent metabolisable energy (AME) in relation to age in young broilers from 8 days of age and in adult layers fed wheat-based diets. Growth and laying performance were also measured to validate any improvement in digestibility.

Ross day-old male broilers were reared in battery cages to determine AME (120 birds) or in floor pens to measure growth performance (3000 birds). They received a pelleted diet containing 500-570 g/kg of wheat with soya bean meal, extruded soya beans, and animal or vegetable fat from day-old to 42 days of age. Xylanase (Rovabio™ Xylan) was sprayed onto the pellets (200 mL/tonne). AMEn was measured according to the European reference method (Bourdillon et al., 1990) between 8-12 and 24-27 days of age. The first balance trial showed an improvement in AMEn (+2.4%) which further increased to +4% at 27 days of age. Feed efficiency was enhanced by 3.4 to 4.4% in the finishing period.

Isabrown laying hens (48 birds) received a wheat-based diet (650 g wheat/kg) from 27 to 32 weeks of age. The AME and feed digestibility were measured in ad libitum fed birds according to Lesaire et al. (1995) using 12 replicates of 2 hens per cage. Xylanase (Rovabio™ Xylan) was incorporated as powder (50 g/tonne) in the mash feed. The AMEn was significantly improved by xylanase supplementation (13.14 vs 12.66 MJ/kg DM, +3.8%). Feed efficiency measured between 27 and 32 weeks of age was enhanced by more than 4% in the enzyme-treated group.

These results indicate that xylanase addition allows young broilers as early as 8 days of age and adult layers to derive more nutrients from their feed, resulting in enhanced profitability in poultry production.


Rhone-Poulenc Animal Nutrition, 42 Av A. Briand BP 100 92164 Antony Cedex, France.