Effect of supplementation of NSP enzymes in association with phytase on egg production parameters in laying hens fed maize and soybean meal based diet

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Introduction

The association between phytase and carbohydrases can be categorised as synergistic. Their positive effects are due to enhancement of nutrient digestibility in young chicks fed corn and soybean meal. What about laying hens ?

Objective

The aim of this study is to evaluate the response of laying hens to multi-enzymes preparation containing xylanase, β-glucanase and phytase.

Materials and methods

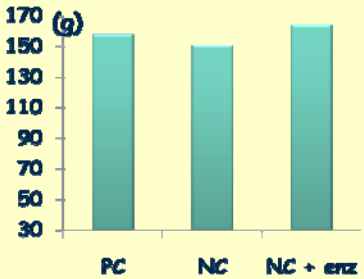
✓ Enzymatic activities: xylanase : 1400 AXC units g^{-1} ; β-glucanase : 2000 AGL units g^{-1}; phytase : 10000 FTU g^{-1} (Rovabio Max, Adisseo, SA-France).
✓ Seven hundred and sixty eight laying hens (Hy Line Brown) were allowed into 3 groups:
PC : positive control group: diet cover the nutritional requirements for laying hens
NC : negative control group: diet containing fewer nutrients than PC (AP: 0.18 *vs.* 0.33; ME: 2590 *vs.* 2655 kcal/kg; CP: 16.65 *vs.* 16.90%)
NC + enz : NC diet supplemented with 50 mg of multi-enzymes preparation / kg of diet
✓ egg production, egg weight, feed intake and body weight were recorded.
✓Data were analysed using the ANOVA procedure of Statview.

Results

Table 1. Effect of multi-enzymes preparation on egg production parameters

Groups	Egg weight (g)	Egg production (% hen-day)	Egg mass (g/day/hen)	Feed intake (g/day/hen)	Feed conversion ratio
PC	62.50	93.60^{a}	58.43^{a}	110.81^{a}	1.907^{a}
NC	62.16	92.18^{b}	57.22^{b}	113.47^{b}	1.994^{b}
NC + enz	62.68	93.96^{a}	58.98^{a}	112.66^{c}	1.914^{a}
Probability	NS	P = 0.0055	P = 0.0283	P < 0.0001	P = 0.0074

Figure 1. Effect of multi-enzymes preparation on laying hens body weight changes



✓NC group had the lowest egg production and the highest feed intake
✓Multi-enzymes preparation increased egg production by 2% and egg mass by 3%.
✓Multi-enzymes preparation decreased feed conversion rate by 4%.
✓ Egg weight and changes in body weight were not affected.
✓ Performances were similar between PC and NC + enz.

Conclusion

Multi-enzymes preparation allows to save nutrients (P, Ca, CP and ME) without affecting the laying hen performances.