Understanding the key role of NSPases in early broiler nutrition

The early nutrition of broilers plays a key role in their lifetime productivity as in this intensive growth period the gastro-intestinal tract (GIT) is under development. Alongside efficient nutrient utilisation, a healthy gut will support a robust immune system. It is widely accepted that maintenance or improvement of gut health is essential for optimum growth, better feed efficiency and overall health.

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As the bird shifts from a metabolism based on lipid-rich yolk to a solid carbohydrate and protein based diet at hatch, the diet has a crucial influence on the subsequent growth and development of broiler chicks considering that the GIT of newly hatched birds will be functionally immature. Research has already demonstrated a strong positive correlation between early life weight and body weight at the end of the production cycle.

Improved performance has been reported in broilers by feeding pre-starter diets containing carbohydrates and fat during the first hours of life.

Additionally, starter diets are prepared with more focus on digestible nutrients than the total requirements and it can precondition the bird to later digest more complex substrates once the enzymatic system in the GIT becomes mature. Since highly digestible alternative substrates tend to be more expensive, the use of exogenous enzymes can be a tool to improve productivity.

Exogenous enzymes, namely non-starch polysaccharide degrading enzymes (NSPases), are nowadays an essential additive in the diet of high performing birds, being fed throughout the life cycle.

The role of NSP degrading enzymes in early development stages of broilers

To evaluate the effect of an NSP degrading enzymatic complex, Hostazym X, on the early life stage of broilers growth, a set of five equivalent zootechnical performance trials was pooled from recent Huvepharma research. The results were analysed for the correlation between starter phase performance and all life cycle performance. A high nutrient dense control diet was compared with the same diet supplemented with Hostazym X.

All trials were set as 42 day grow-out experiments using wheat, maize, soybean meal based diets for the starter phase and wheat, maize, soybean meal and rapeseed meal for the grower and finisher phases.

The trials compared two treatments, a control diet fed group and a control plus enzymatic complex (at 1500 EPU/kg) fed group.

Standard performance indicators were measured.

Fig. 1 summarises the performance results at the end of the starter diet feeding phase of all trials.

All trials showed results for body weight and FCR with significant differences (at $p<0.05$ or $0.05 \leq p \leq 0.1$).

The added value and efficacy of the enzymatic complex can be clearly seen at the end of the starter phase where broilers show a significant positive performance response averaging plus 23g body weight and six FCR points less.

Following the overall performance results (full life cycle) the difference amongst treatments is up to 5% improvement in final body weight and 3% in FCR, demonstrating that a better start reflects a better/more efficient end (Table 1).

Conclusion

NSPases, namely enzymatic complex Hostazym X, play a key role in the nutrition of high performing young birds providing optimal performance results.

They help the bird to cope with nutritional challenge and stress by getting the most out of the diet for growth metabolism.

This supports an efficient use of nutrients while the GIT and the endogenous enzymatic systems are still under development. ■

References are available from the author on request

Table 1. Performance improvement expressed as % body weight improvement over control and % of FCR improvement over control in five different broiler performance trials.

Trial	Improvement over control at the end of the trial (%)	
	Body weight	FCR
1	3	2
2	3	3
3	4	1
4	5	3
5	3	2

Fig. 1. Body weight and FCR at the end of the starter phase in five different broiler performance trials. End of starter phase Trials 1-3 at 10 days and Trials 5-6 at 14 days.