

Optimising the utilisation of energy from modern poultry diets

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In modern intensive production the efficient use of rations is a challenge for birds, particularly when exposed to phases of production characterised by metabolic stress. During the first week of life it is very important to give the young chicks a boost for an ideal start. Improving their livability, homogeneity and reducing mortalities during these first days are some of the most challenging goals facing poultry farming.

Nowadays, young chicks do not achieve their maximum growth potential with the feed given during the early phase. One way of achieving this is by supplementing extra energy in the feed or water.

In addition, the birds demand higher nutritional care during this phase due to the metabolic change post-hatching. This is because the digestive system is not mature enough and not prepared to receive the first feed, negatively affecting the absorption.

Apart from the role of energy metabolism during the start-up period of birds, supplementing energy has shown positive results after vaccination and during heat stress periods. High temperatures during summer time, immune depression and consequent reduced feed intake are annual challenges that need to be overcome quickly to minimise fluctuations in performance and allow a stable production.

AviPro Liquid LC Energy is an ideally balanced liquid formulation with easy application in drinking water that enhances the utilisation of energy and protein during critical stages of production. It contains a particular combination of compounds – L-carnitine, betaine, sorbitol and magnesium – which are responsible for stimulating feed

consumption, improving digestion and enhancing liver and renal functions.

AviPro Liquid LC Energy optimises the conversion of energy from the diets in order to respond to the high nutritional needs of birds during the first days of life and periods of high metabolic stress.

L-carnitine

The key function of L-carnitine in energy metabolism is well known. It is responsible for the transportation of long-chain fatty acids into the mitochondrial matrix where β -oxidation of activated fatty acids occurs. Recently, other functions of L-carnitine have been studied, such as how it strengthens the immune system, its antioxidant effect and its influence on muscle development by increasing IGF-1 and IGF-2.

Young birds and breeders have an increased demand for carnitine. During the first days of life, the kidney and the liver are not sufficiently mature to produce L-carnitine. This fact, together with the anabolic situation of rapid growth, signifies that L-carnitine synthesis is insufficient to cover endogenous requirements. This means that L-carnitine supplementation is essential during the first phase of life in order for birds to be able to overcome their challenges.

Betaine

Betaine basically has two metabolic functions: it can serve as a methyl donor and it can help maintain cellular osmolarity.

On the one hand, as methyl donor, betaine donates its labile methyl group for synthesis of substances like carnitine and creatine. Together with choline and methionine it belongs to the lipotropic factors which protect the liver (fatty degeneration of the liver). On the other hand, the osmoprotective properties of betaine aid in protecting intestinal cells by increasing the cytoplasmic volume and free water content of the cells at high osmolarity. In this way betaine permits cell proliferation under stress conditions, counteracting performance losses during heat stress and coccidiosis. In practice it is possible to verify an

improved nutrient digestibility, growth performance, feed conversion, and a stronger immune system in broiler chicks and turkeys.

Sorbitol and magnesium

Sorbitol provides the body with rapidly available energy. Metabolism of sorbitol occurs outside of the liver. Magnesium is a cofactor in hundreds of enzymatic reactions, many of which involve energy metabolism. It also plays an important role in protein and nucleic acid synthesis and has a stabilising and protecting effect on cell membranes of muscle cells and neurons.

Field studies

A field trial was performed in Germany in order to evaluate the effects of AviPro Liquid LC Energy on broiler performance. The results, based on slaughterhouse data, showed an improvement in body weight and FCR when compared to the control group. A difference of 2.2% in weight (2,083g vs 2,129g) was observed in addition to a difference of 4% in FCR (1.706 vs 1.638). In the same way, results of a further trial in turkey hens showed improved FCR, increased livability due to low incidence of non-specific poult enteritis and higher daily weight gain, when supplemented with 1L/ 1000L of drinking water of AviPro Liquid LC Energy. Additional benefits were reduced medication costs and excellent floor conditions.

Conclusion

Allowing birds to optimise conversion of the energy provided in the diets will result in visible improvement of zootechnical parameters during critical periods.

AviPro Liquid LC Energy has proven to ideally start off and boost young chicks, reduce the negative impact of heat stress during warm seasons, support birds at onset of laying as well as support the muscle, liver and kidney metabolism. ■

References are available from the author on request

