ADDEmul - Nutritional Emulsifier for Poultry

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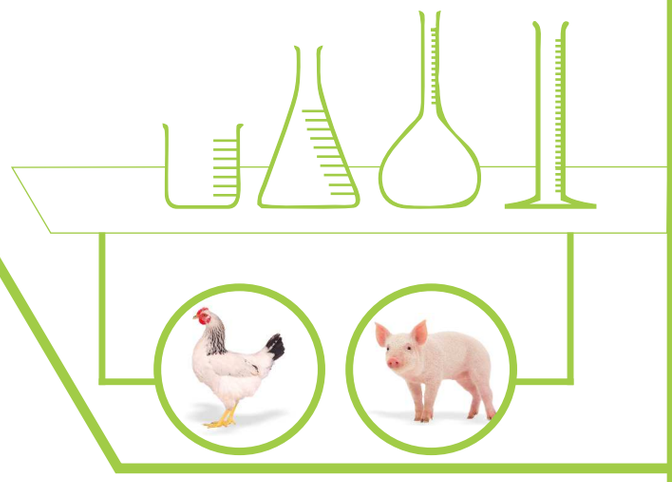

Introduction:

Commercial feeds are often supplemented with fats and oils to provide a diet with sufficient energy content. To assure that these energy sources are absorbed efficiently by the bird's digestive system one should add emulsifiers.

To meet the needs of modern intensively reared broilers, diets are supplied with a very high nutrient and energy concentration. To achieve this high energetic density, fats and oils are incorporated into commercial diets. Besides their use as an energy source, other nutritive applications of lipids are the supplier of essential fatty acids and the solvent of fat-soluble vitamins. Fats are also added because of their effect on the physical properties of feed, like the reduction of dustiness and reduced particle separation in mash diets.

Between lipid sources there is a very broad range in energy yielding capacity, which originates in their chemical structure, inclusion rate in the diet and the composition of the other dietary components. In addition to feed factors, bird specific factors like health status and age of the bird contribute to the metabolic energy value of a feed fat as well. Lower metabolic energy values of fat sources as the result of an impaired fat digestibility, can be enhanced by supporting the fat digestive capacity of the broiler, Supplementary to physiological emulsifiers (bile salts), exogenous emulsifiers added to the feed can play a significant role.

Absorption of lipolytic products:

Dietary fat enters the gastro-intestinal tract as part of the digesta in rather big coagulated particles. Under the influence of bile salts from the gall bladder, these fat particles are emulsified into smaller particles. This increases the surface of fat particles, thereby expanding the target area of the lipolytic enzyme lipase. A fat molecule (triglyceride) is composed of a molecule glycerol in which each of the three carbons is linked to a fatty acid. Triglycerides are enzymatically digested by lipase into a monoglyceride and two free fatty acids.

At physiological circumstances most of the fatty acids derived after lipase hydrolysis are insoluble. For further transport through the aqueous environment of the intestinal tract, solubilisation of these lipolytic products is required This is established through the process of micelle formation, which is the aggregation of hydrophobic components (primarily fatty acids) medicated by amphiphatic molecules such as bile salts and monoglycerides. In addition to these physiological amphipatic molecules, specific feed added exogenous emulsifiers have the properties to display this effect.

In the process of micelle formation, the amphiphatic molecule, which comprises both hydrophilic (water-attracting) and hydrophobic (water-repelling) properties in one molecule, functions as a bridge between fat and water, around which hydrophobic molecules (fatty acids) can orientate themselves.

The hydrophilic "heads" of the fatty acids will face the aqueous environment of the digesta, leaving the hydrophobic "tails" of the fatty acids to format the core of the micelle. These spheric micellar structures are able to solubilise fatty acids in the intestinal tract together with other fat soluble components like phospholipids, cholesterol and fat-soluble vitamins. Micellar solubilisation can increase the aqueous concentration of fatty acids might be absorbed through a carrier-mediated process. it is assumed that most of the absorption of the micellar contents by the enterocyte takes place through passive diffusion. Passive diffusion is the movement of compounds from the intestinal lumen across the cell membrance into the enterocyte, in order to equalise the concentration of the substrate on both sides of the membrane. Contrary to single fatty acids, fatty acids incorporated into micelles are able to create a much higher diffusion gradient locally at the intestinal wall.

What is ADDEmul?

ADDemul is a blend of hydrolysed lecithin , Lysophospholipids, Phosphatidyl choline, Trimethyl, polypeptides and methyl donors which increases the digestibility of long chain saturated fatty acids.

Nutrient Utilization:

The beneficial effect of ADDEmul is the performance of chickens may be related to metabolizability of nutrients especially that of fat which improved significantly when ADDEmul is added to diet. Fat metabolizability increased almost by 36% due to addition of ADDEmul. The HDL:LDL ratio is not affected significantly due to the addition of emulsifier.

Dosage: 100-200g per ton feed.
Shelflife: Two years from the date of manufacture.
Packaging: ADDEmul is available in 25 kg Paper bags

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