Volamel Extra: a gut-effective nutritional emulsifier

Background

Young animals, in general, are not adapted to consume and digest large amounts of fat. Their digestive system still needs to develop and the level of digestive enzymes and bile salts only gradually increases when they grow older. In broilers, for example, the production of bile salts, necessary for fat emulsification and micelle formation, only reaches its maximal potential after seven weeks of age, the time when the bird is already slaughtered.

Nutritionists all over the world know that fats and oils are essential to produce energy-dense feeds that maximise performance and feed efficiency. Advances in the study of genetics have reinforced this knowledge. About one third of the energy present in calf milk replacers is derived from the fats and oils in them, but these fats and oils are expensive. Thus, poor digestion of fats and oils can lead to suboptimal growth and severe economic losses. Moreover, undigested fats in the lower digestive tract encourage the growth of undesirable bacteria leading to health issues, which are often manifested in the form of diarrhoea.

Volamel Extra: 20 years in the making and continually being refined

The use of Volamel Extra as a nutritional emulsifier was first explored in the field of CMRs, as part of Nukamel’s ‘Emulsizym®’ concept. As the lack of bile salts is a common issue for all young animals, it soon became clear that broilers and piglets also benefit from this product. Volamel Extra is unique due to its extremely hydrophilic character; compared to other (lyso)lecithin or (lyso)phospholipids-based products it has a much greater capacity to reduce the interfacial tension between an oil and water interface. This way, it closely mimics the action of bile salts in the gastrointestinal tract in creating mixed micelles. In Figure 1, an in vitro trial shows this.
Due to a growing world population, greater competition between food and feed producers for raw materials pushes prices up, and feed manufacturers increasingly need to source for cheaper alternative ingredients. They must be creative as these alternatives often have a lower nutritional value, e.g. high levels of non-starch polysaccharides, lower digestibility, presence of anti-nutritional factors etc. This explains the success story of feed enzyme technology over the past decades.

Nutritionists need to economise in terms of fats and oils too. A nutritional emulsifier that improves fat digestibility and, therefore, maximises the use of energy included in the feed has a cost-reducing impact. Based on worldwide studies performed with different fat sources and in different types of feed formulae, at universities and in commercial environments, Volamel Extra has been shown to compensate on average 3% of energy in feed. Moreover, the product gives the opportunity to use a broader range of fats, like highly saturated fats, yellow grease, fatty acid blends or full-fat products, without loss of performance. A recent in vivo trial in broilers clearly proves this beneficial effect.
With increased pressure on antibiotics reduction, especially within the EU, more attention is being paid to the positive relationship between digestibility and health. In this respect the value of a nutritional emulsifier can also be expressed in terms of improved intestinal health, fewer problems with wet litter, lower foot path lesion scoring and superior animal welfare conditions. A trial performed in India on broilers (Cobb 400) demonstrated these additional advantages of the use of a nutritional emulsifier.