



# LECITHIN AS A RICH ENERGY SOURCE WITH NUTRITIONAL PERFORMANCE

**Nobacithin Aqua R100 is a liquid lecithin product for larvae, juvenile and grower diets**

Lecithin may be produced from egg yolk, but more commonly used in aquafeed are soya and rape seed lecithin. It is well known that the phospholipids (PL) present in lecithin act as an emulsifier of lipids in the animal stomach and gut, but especially the nutritional benefits of lecithin is why fish nutritionists like to include it in fish and shrimp diets. Lecithin is widely used in feed for larval and juvenile stages of various species of fish and crustaceans, because those developing fish have a limited ability to the novo phospholipid synthesis. This article will highlight some of the other reasons and benefits to include lecithin in aquafeed for all life stages.

## Phospholipids

Phosphatidylcholine (PC) is the most abundant PL in fish tissues and is among many others an important catabolic energy source for egg and larval embryogenesis and important for intestinal lipid absorption. In literature many examples may be found of the benefits of PL on survival, growth, resistance to stress tests, prevention of malformations, essential lipid composition of the fish. Seemingly phosphatidylcholine (PC) is more effective for growth improvement while phosphatidylinositol (PI) and phosphatidylethanolamine (PE) are more important for survival and preventing deformities in the developing fish and are a structural component of practically all cell membranes.

## Pellet quality

PL may improve the performance of the diet by improving the water stability of food particles, or by their action as antioxidant or feed attractant. An interesting example of a practical application of lecithin was already published by Castell in 1997. They hypothesise that dietary supplementation of soybean lecithin prevents molt death in lobsters, by reducing the leaching of water soluble nutrients, in particular manganese and B vitamins. Various forms and concentrations of dietary choline were not as effective as PC in reducing molt death syndrome in juvenile lobsters. Soy lecithin may increase the

LITERATURE AVAILABLE ON REQUEST.

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Phospholipids increase lipid retention and levels in the animals.



Lecithin induces a higher activity of enzymes.

physical water stability of aquafeed pellets and thereby reduce the loss of water soluble nutrients.

### Lipid transport and retention

PL are required in shrimp feed for the efficient transport of dietary fatty acids and lipids from the gut epithelium into the haemolymph, and the mobility of lipids between the various tissues and organs. PL also reduce the accumulation of lipid droplets in the intestine, due to its essential role in the transportation of Triacylglycerol (TAG) from the intestinal mucosa via the haemolymph into the serum of shrimp as chylomicron and other lipoprotein. Diets with additional PL have higher levels of plasma lipoproteins and epithelial enzymes. The inclusion of PL in the diet affects lipid deposition, resulting in increased lipid retention and levels in the animal.

### Nobacithin Aqua

Noba Vital Lipids developed a liquid lecithin blend, named Nobacithin Aqua R100. Native liquid lecithin has a very high viscosity and is therefore not so easy to handle in a feed plant. In Nobacithin Aqua R100, oil and fatty acids have been added to lecithin which makes its application much easier. This Nobacithin Aqua R100 is based upon rape lecithin. It is a NON-GMO blend. Beside this rape base blend, there are also mixtures of Nobacithin Aqua based upon soybean lecithin.

What makes Nobacithin Aqua R100 stand out from other lecithin products? There are many dry lecithin products on the market, those are mainly used for the juvenile and larvae stages. A liquid product is often cheaper than a dry product. With the usage of Nobacithin Aqua you have the possibility to increase the inclusion levels of lecithin, and that is interesting because of the nutritional mechanisms and benefits described in this article. Because of the stickiness of lecithin, blended with fish oil it may be applied

Phospholipids improve water stability of food particles.



### Benefits of lecithin (phospholipids):

- Higher survival and growth
- Better resistance to stress
- Prevention of malformations
- Improve water stability of food particles
- Reduce leaching of water soluble nutrients
- Antioxidant
- Reduce accumulation of lipid droplets
- Higher levels of plasma lipoproteins
- Higher levels of epithelial enzymes
- Increase lipid retention
- Better essential lipid composition of the fish.

as coating for the pellets contributing to a better pellet quality. Nobacithin Aqua is suitable for larvae, juvenile, and grower diets for many species of fish and crustaceans.

### Noba

Noba Vital Lipids is a leading Dutch manufacturer and supplier of high energy fat products for the animal feed and aquafeed industries, servicing greater Europe. Our strengths are rooted in more than 60 years of experience alongside our high standards of quality, which are fulfilled at every step of the production process. Noba is deeply committed to ensuring meticulous care and product safety during raw material selection and processing, as well as in the final product. The result is the unbeatable quality found in each and every Noba product.

Noba partners with leading research universities and animal feed testing centres to conduct basic nutritional research and in-depth feed trials. We focus on nutrients, not just ingredients. Our proprietary technology allows us to deliver optimal nutritional value and consistency in every batch we produce. We deliver throughout Europe with maximum flexibility and reliability, even at short notice. At our premises in The Netherlands, Germany and Austria we have a tank storage capacity of over 100,000 tonnes. These capacities and the provision of a large fleet of modern tankers guarantee punctual and flexible delivery to our clients.

Visit our booth at the exhibition during the Aquaculture Europe 2015 conference from 20-23 October in Rotterdam to see the product **Nobacithin Aqua R100**.