



Orffa: How To Fulfill The Tilapia Promise – The Benefits Of Using Feed Additives

Nile tilapia farming experienced a few decades of spectacular growth, up to a global production of 4.5 million tonnes in 2020.

The growth of the tilapia aquaculture sector has not stopped, and it is just a matter of time before the Nile tilapia becomes the single most produced species in aquaculture worldwide. Easy handling, fast and short growing cycle and adaptability to different diets make Nile tilapia an excellent fish species for intensive aquaculture.

However, just like all aquaculture fields, the tilapia farming industry is facing some serious challenges, such as increasing feed prices, high disease pressure, sustainability issues and decreasing water quality. It is of vital importance for tilapia fish farmers and feed producers to find new solutions to cope with these challenges.

One viable strategy to do this is through the use of feed additives, which are known to offer feed producers and fish farmers a wide variety of options. Orffa is a global player in the feed additives market and as such, the company offers a broad range of feed additive solutions, including a nutritional emulsifier (Excential Energy Plus), organic selenium (Excential Selenium 4000) and betaine (Excential Beta-Key).

In this article, the role these feed additives can play in tilapia farming will be explained.

Increasing efficiency with a nutritional emulsifier

One emerging challenge nowadays is the fast-rising feed costs.

The pressure of feed costs has risen and can, in some cases, be more than 80% of all costs in intensive aquaculture. As a consequence, the industry is focused on decreasing feed costs by improving efficiency.

Orffa is well aware that feed additives can play a vital role in decreasing feed costs and offers innovative solutions. One strategy is to look at the digestion of tilapia, especially of expensive components like fat and protein.

Orffa developed Excential Energy Plus, which is known to increase nutrient digestion

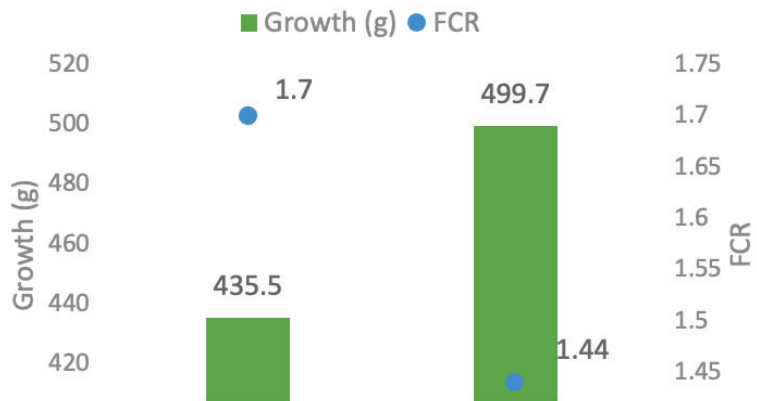


Figure 1: Growth (g) and FCR of Nile tilapia fed with and without nutritional emulsifier



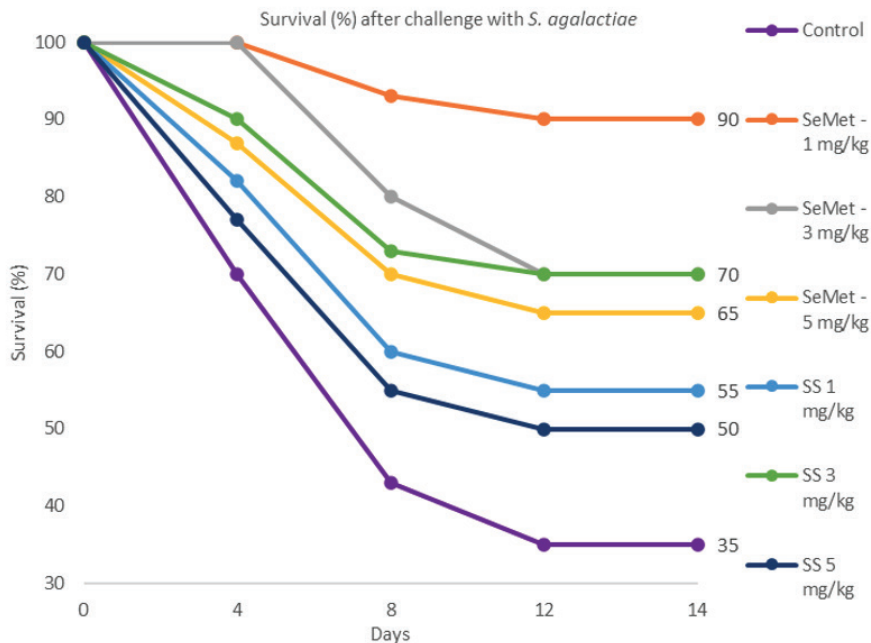


Figure 2: Effect of different sources and levels of dietary selenium on the survival of Nile tilapia during the first 14 days after infection with streptococcus agalactiae and different levels of selenium (Wangkahart et al., 2022)

selenium in animal tissue acts as a storage of selenium in the fish. The stored selenium can be mobilised and ensures an optimal supply of the trace element, even during stressful periods when selenium demand is increased.

The efficacy of Excential Selenium 4000 was tested in a trial with Nile tilapia. Fish were fed either Excential Selenium 4000 [SeMet] or the inorganic source sodium selenite (SS) at 1mg/kg, 3mg/kg and 5mg/kg of feed.

After eight weeks of feeding, the highest growth performance was achieved for the group receiving 1mg of SeMet/kg in their diet ($p < 0.05$). After this period, the fish were challenged with *Streptococcus agalactiae*, and cumulative survival was measured. Again, 1mg/kg addition of Excential Selenium 4000 outperformed control and inorganic selenium ($p < 0.05$; Figure 2). These results clearly show the potential of Excential Selenium 4000 to increase fish health and survival.

Betaine to increase feed sustainability in aquaculture

In aquaculture, betaine sources like Orffa's Excential Beta-Key, support fish health and performance.

With the use of feed additives, tilapia farmers are able to reach their full potential in a more sustainable way.

Table 1: FCR of Nile tilapia fed different all plant protein based diets with and without inclusion of betaine at 2g/kg

	Fishmeal	Soybean	Corngluten	Soybean + corngluten
No betaine	1.62 ^b	1.84 ^d	1.80 ^{cd}	1.76 ^{cd}
Betaine		1.59 ^{ab}	1.73 ^c	1.51 ^a



and energy efficiency in Nile tilapia. In a field trial in Thailand, it was observed that after 92 days, the tilapia fed diets with Excential Energy Plus at 350g/MT had significantly higher growth ($p < 0.05$) and lower FCR compared to animals fed the control diet (Figure 1).

The role of selenium in Nile tilapia farming

Selenium is an essential trace element, as it is a vital component of selenoenzymes which play a role in reducing reactive oxygen species (ROS) and maintaining a healthy antioxidant status.

Orffa offers an organic selenium source as pure L-selenomethionine (Excential Selenium 4000). The advantage of using L-selenomethionine is its unique property as an amino acid. L-selenomethionine is the only form of selenium that has the ability to be incorporated directly into general body proteins, in the place of methionine. The incorporated

Betaine has multiple functions, like serving as an efficient methyl donor, protective osmolyte, feed attractant and liver protector. It is shown in Nile tilapia that the addition of 2g/kg of betaine significantly improves the feed intake – even when high-value fishmeal is compared with all plant-based diets based on soybean or corn gluten meal, or a combination of both.

Besides increasing feed intake, the addition of 2g/kg of betaine to all plant-based diets has led to a significant improvement in FCR ($p < 0.05$; Table 1; Ismail et al., 2020). The above-described trials show the potential of feed additives to stimulate the growth of Nile tilapia farming.

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For more information about the solutions mentioned in this article or other solutions, please go to: www.orffa.com

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