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Excential Selenium 4000: a functional selenium source to increase Tilapia growth performance and health

EXCENTIAL SELENIUM 4000 IN TILAPIA, BASED ON A PEER-REVIEWED SCIENTIFIC ARTICLE BY DR. WANGKAHART

Replacement of marine-based ingredients by plant-based ingredients has led to decreased selenium (Se) contents in aquafeed, causing deficiencies in fish. Se is an essential trace mineral, which plays an important role in several biological systems. Se deficiencies, therefore, result in decreased growth performance, reduced immunity, increased oxidative damage and can, eventually, cause higher mortality rates. Supplementation of Se is thus a necessity, and Excential Selenium 4000, Orffa's L-selenomethionine source, was shown to be an effective solution to cope with decreasing Se levels in aquafeed.

NILE TILAPIA TRIAL

At the Mahasarakham University in Thailand, 735 Nile Tilapia were fed different sources of Se (sodium selenite and Excential Selenium 4000 (L-selenomethionine)) at increasing levels of inclusion (1, 3 and 5 mg Se/kg). After 8 weeks, the growth performance, antioxidant status and immunity parameters were assessed. Next to that, the fish were challenged with *Streptococcus agalactiae* and disease resistance was measured.

GROWTH PERFORMANCE

Increasing the Se content in the diet by Se from sodium selenite (Na^2SeO^3) did not affect growth performance. On the other hand, when the Se content in the diet was increased by Se from Excential Selenium 4000 (L-selenomethionine), overall improved growth performance was observed, with an optimum at 1 mg Se/kg inclusion. Weight gain (Figure 1), FCR and specific growth rate were all significantly improved. An inclusion level of 1 mg Se/kg from Excential Selenium 4000 showed the best growth performance.

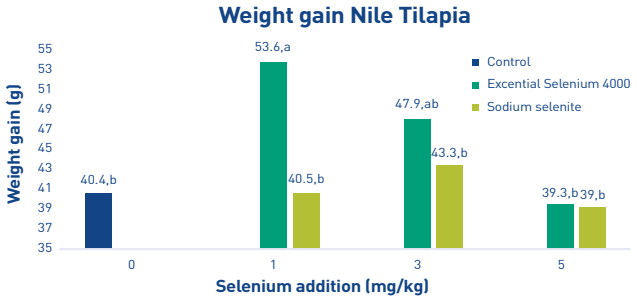

Figure 1: Weight gain of Nile Tilapia after 8 weeks of feeding with different sources and different levels of selenium

IMMUNITY AND DISEASE RESISTANCE

When looking at the antioxidant status of the fish, it can be observed that increasing the Se content in the diet significantly increased the antioxidant status, by improving SOD, CAT, GPx, LZM and MDA, regardless of the source. Additionally, Excential Selenium 4000 improved the hematological, blood chemistry and antioxidant parameters to a higher extent than sodium selenite. These results indicate that Excential Selenium 4000 enhanced fish health to a higher extend compared to sodium selenite, with an optimal level of 1 mg Se/kg from Excential Selenium 4000. Improved health status is confirmed by the higher survival rate after injection with Streptococcus agalactiae, a severe neurological bacteria in Nile Tilapia aquaculture. Fish fed Excential Selenium 4000 level of 1 mg Se/kg had significantly ($p<0.05$) the highest survival after infection. Additionally, all Excential Selenium 4000 inclusion levels outperform the same sodium selenite inclusion levels (Figure 2).

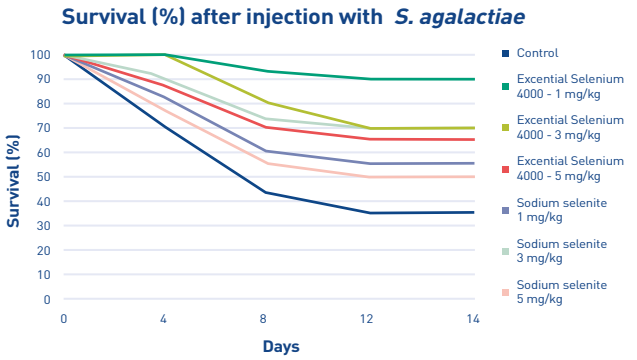

Figure 2: Survival of the fish in the first 14 days after infection with streptococcus agalactiae in Nile Tilapia, fed different sources and different levels of selenium

Overall, it can be concluded that the inclusion level of 1.0 mg Se/kg from Excential Selenium 4000 in the diet is suggested to be the optimal level to improve the growth performance, immune response, antioxidant status and disease resistance of Nile tilapia.

100% pure L-selenomethionine

Improves disease resistance

Enhances antioxidant status

Supports fish performance

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