INSIGHTS - A LOOK INSIDE PEER-REVIEW

Zinpro® Performance Minerals® Improve Nile Tilapia Growth, Feed Efficiency, Gut Microbiota and Profitability

Study Objective

Evaluate the effects of gradually replacing inorganic trace minerals with Zinpro® Performance Minerals® on growth performance and modulation of intestinal microbiome of Nile tilapia (*Oreochromis niloticus*).

Animals

1200 all-male Nile tilapia;
~90 g initial BW

Treatments

Five treatments evaluated were:

Inorganic: 60 ppm Zn, 30 ppm Mn, 10 ppm Cu, 100 ppm Fe and 0.2 ppm Se from inorganic sources

Zinpro Availa 25%: Replaced 25% inorganic minerals with 15 ppm Zn, 7.5 ppm Mn, 2.5 ppm Cu, 25 ppm Fe and 0.05 ppm Se from Availa line products

Zinpro Availa 50%: Replaced 50% inorganic minerals with 30 ppm Zn, 15 ppm Mn, 5 ppm Cu, 50 ppm Fe and 0.1 ppm Se from Availa line products

Zinpro Availa 75%: Replaced 75% inorganic minerals with 45 ppm Zn, 22.5 ppm Mn, 7.5 ppm Cu, 75 ppm Fe and 0.15 ppm Se from Availa line products

Zinpro Availa 100%: Replaced 100% inorganic minerals with 60 ppm Zn, 30 ppm Mn, 10 ppm Cu, 100 ppm Fe and 0.2 ppm Se from Availa line products

Study Duration

80 days

Location

Alexandria University,
Alexandria, Egypt
Farm location: Edku, Beheira Governate, Egypt

Results Summary

Replacement of inorganic minerals with Zinpro Performance Minerals:

- Led to a positive economic impact, where Zinpro Availa 50% had the greatest increase in profitability over the Inorganic treatment at 21%
- Increased weight gain by 26% and reduced FCR by 12.4% with a 50% inclusion rate
- Resulted in greatest bone Zn and Se content with Zinpro Availa 50% and 100%, respectively; Additionally, the highest fillet Se content was observed in Zinpro Availa 75% and 100%
- Positively modulated intestinal microbiome by increasing beneficial bacteria, such as *Bacillus* and Lactic Acid bacteria, while reducing harmful bacteria such as *Streptococcus* and *Staphylococcus*, when included at 50 to 100%.

Replacing inorganic trace minerals with Zinpro® Performance Minerals® benefitted tilapia production through improved performance, gut microbiome and economic return.

Figure 1. Weight Gain

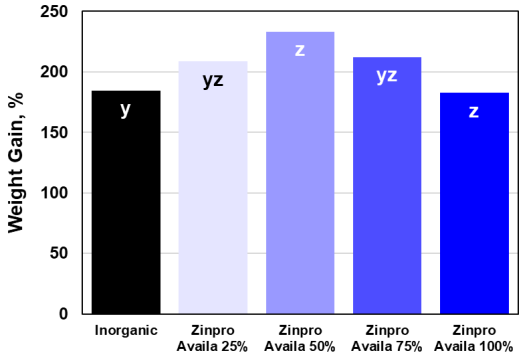


Figure 2. FCR

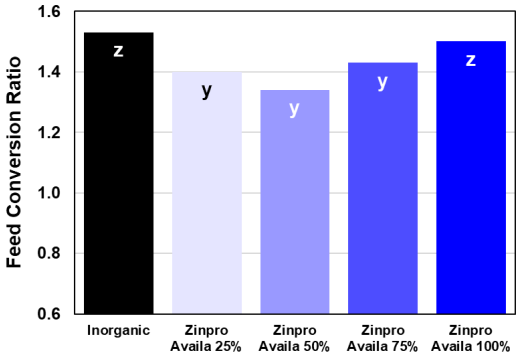


Figure 3. *Streptococcus*

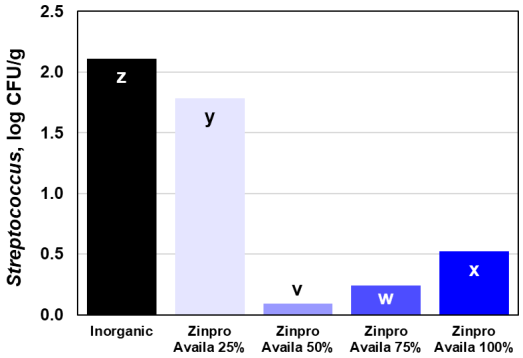
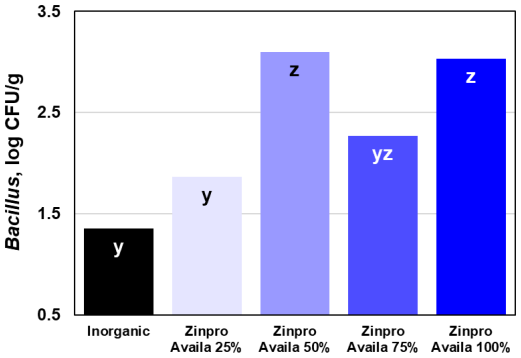


Figure 4. *Bacillus*



[vwxyz] Within chart, means lacking a common superscript letter differ, $P < 0.01$

DOWNLOAD ABSTRACT/FULL REPORT

El-Sayed, A-F.M., C. Figueiredo-Silva, S.M.S. Zeid, and S.O. Makled. 2023a. Metal-amino acid complexes (Zn, Se, Cu, Fe, and Mn) as a replacement of inorganic trace minerals in commercial diets for Nile tilapia (*Oreochromis niloticus*) reared under field conditions: Effects on growth, feed efficiency, gut microbiota, intestinal histology, and economic return. Aquaculture. 567:739223. https://doi.org/10.1016/j.aquaculture.2022.739223

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