PONTUS RESEARCH

SIMPLY FISH

YARA

Knowledge grows

BOLIFOR® MAP has outstanding phosphorus digestibility in Nile tilapia *(Oreochromis niloticus)*

Introduction

- Supplementation of phosphorus (P) is usually more critical than for other microminerals, because its presence in water an availability is very limited. Dietary deficiency of P impairs intermediary metabolism, resulting in reduced growth and impaired feed conversion ratio. Suboptimal P intakes are also associated with various skeletal malformations.
- The replacement of fish meal by vegetal proteins, poor in digestible P, increases the demand for inorganic feed phosphates inclusion in aqua feed.
- However, P is not equally absorbed and utilized by the animal in all feed phosphates and by all species
- The non-digestible P is excreted as faecal material, which stimulates water eutrophication. Long-term sustainability and business profitability largely rely on precise knowledge of P digestibility and use of highly digestible P sources according to each aquatic species needs.

The objective of the present study was to assess the apparent phosphorus digestibility of BOLIFOR® MAP in a plant–based diet for tilapia *(Oreochromis niloticus)*

Methods

- Experimental design: 96 tanks (100 l), 24 tanks per treatment, semi flow-through. Each tank contained 13 fishes of ~170 g initial weight
- Diets:
  - Basal diet: fish meal-free, P-level: 5,7 g / kg.
  - Experimental diets: Inorganic feed phosphate (DCP (18% P); BOLIFOR® MCP (22,7% P); BOLIFOR® MAP (26% P) added at 2 g (low) or 3 g P/kg diet (high)
  - Added indigestible marker: TiO_2
- Faeces collection: by siphoning
- Experimental unit: one tank

Results

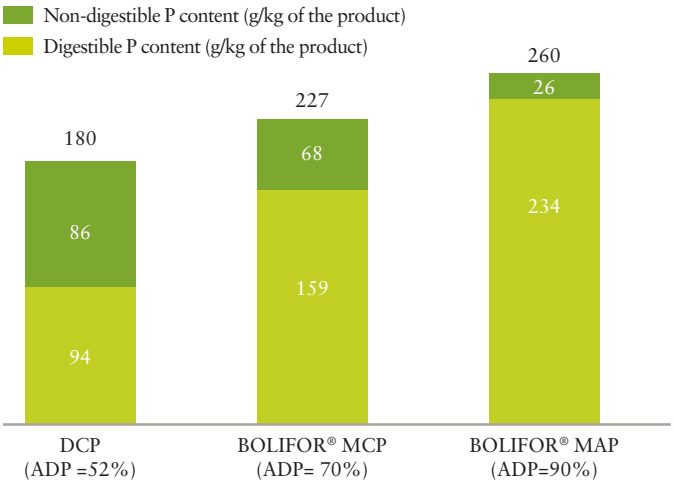

Figure 1. Apparent digestible and non-digestible phosphorous (P) content (g/kg) of of DCP; BOLIFOR® MCP and BOLIFOR® MAP in tilapia. Total P content is showed on the top in g/kg. The coefficient of apparent digestibility of phosphorus (ADP) is showed on the X- axis. The apparent digestible P content can be calculated as total P in the feed phosphate × ADP P.

Conclusions

- BOLIFOR® MAP has demonstrated outstanding P digestibility for Nile tilapia (*Oreochromis niloticus*) (20%- and 38 percentage-units over MCP and DCP, respectively).
- Due to the high P content and high ADP P (90%), BOLIFOR® MAP amongst the best choice of feed phosphate in Nile tilapia to minimize eutrophication due to P excretion in water.
- The present scientific results can be used in aqua feed least-cost formulation.

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