

HiPhorius™

Adding a little wins a lot



Cold Water Fish

Expand your opportunities with a new generation phytase.

Aquaculture Issues

1. Replacement of fish meal with plant-protein meals leads to an increase in the amount of Phytate (antinutrient) in modern fish diets
2. Phytate binds amino acids and other minerals reducing their digestibility
3. Phosphorus is an important nutrient for growth and performance, and it is supplemented in inorganic form in fish diets
4. Undigested Phosphorus and Nitrogen are excreted, leading to culture water pollution and eutrophication

HiPhorius™ advanced phytase solution



1. HiPhorius™ releases faster and more efficiently Phosphate from Phytate, increasing available Phosphorus, as well as other minerals and amino acids



2. HiPhorius™ enables higher use of plant-origin feed raw materials, resulting to fish-feed cost reduction



3. Supplemental inorganic Phosphorus can be reduced or even eliminated, contributing to additional feed cost reduction



4. Fecal excretion of nutrients (Phosphorus, Nitrogen, minerals) is reduced and so is the ecological footprint of fish farming

5. Culture water quality is improved

Recommendations for use

For pelleted fish feed (up to 95°C), HiPhorius™ is recommended. If higher pelleting temperatures or longer conditioning are used during the fish feed manufacturing process, then HiPhorius™20 L is recommended to be used at Post Pelleting Liquid Application (PPLA).

For extruded fish feed only HiPhorius™20 L should be used (PPLA).

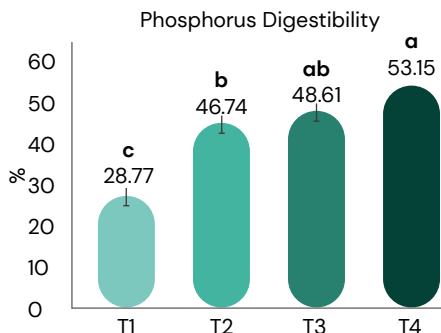
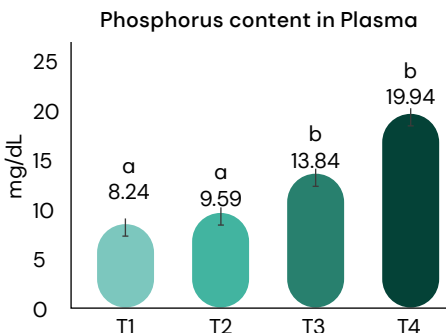
HiPhorius™ nutrient release can be found in dsm-firmenich's Phytase web-tool (phytases.dsm.com). The web-tool is adopting the **Intelligent Phytase Nutrition** concept for optimum dose of HiPhorius™ and maximum benefits.

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Rainbow Trout Trial, Spain, 2020



When HiPhorius™ was added into Rainbow Trout feed, improved significantly

- Phosphorus blood plasma at 2000 & 3000 FYT/Kg of fish feed
- Phosphorus Apparent Digestibility Coefficient (ADC) at 1000, 2000 & 3000 FYT/Kg of fish feed

HiPhorius™ treatments:

- T2 – NC + 1000 FYT/Kg of feed
- T3 – NC + 2000 FYT/Kg of feed
- T4 – NC + 3000 FYT/Kg of feed

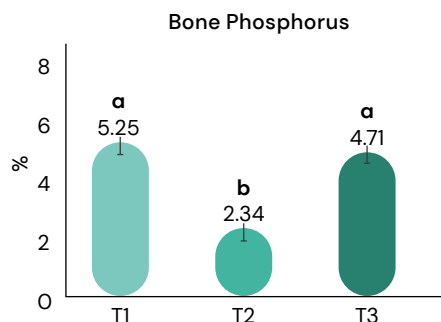
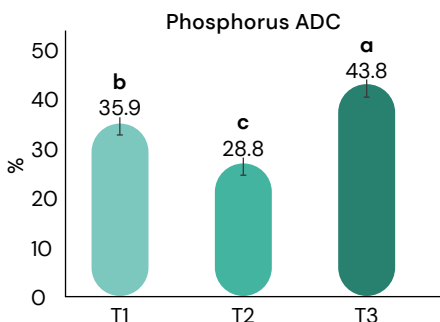
Other treatments:

- T1 – Negative Control (NC), without inorganic phosphate

Additional trial details :

- Extruded feed, 40.1% Crude Protein, 24.4% Crude Fat & 0.7% Total Phosphorus
- Plant-protein based diets (13.2% fish meal)

Rainbow Trout Trial, France, 2020



When HiPhorius™ was added into Rainbow Trout feed at 1000 FYT/Kg of fish feed, improved significantly Phosphorus Apparent Digestibility Coefficient (ADC), Bone Phosphorus showed values similar to the PC when 1000 FYT was supplemented to the NC.

HiPhorius™ treatments:

- T3 – NC + 1000 FYT/Kg of feed

Other treatments:

- T1 – Negative Control (NC), without inorganic phosphate
- T2 – Positive Control, with 1.2% Inorganic phosphate (MCP)

Additional trial details :

- Extruded feed, 40.1% Crude Protein, 24.4% Crude Fat & 0.7% Total Phosphorus
- Plant-protein based diets (13.2% fish meal)

Product forms	Standard Dose in g/MT (1,000 FYT/kg of feed)	Maximum dose in g/MT (3,000 FYT/kg of feed)	Formulation
HiPhorius™10	100	300	Granulated
HiPhorius™20 L	50	150	Liquid

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