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DU PONT®

Phyzyme® XP TPT

UNRIVALLED HEAT STABILITY,
SUPERIOR PERFORMANCE

Danisco Animal Nutrition

Phyzyme® XP TPT

Market leading phytase: established and effective with unique TPT coating

Lower feed costs

- Increased nutrient and energy availability
- Reduced inorganic phosphate use
- Greater flexibility in ingredient use

Confidence in use

- Proven, superior, bioefficacy compared with fungal phytases
- Heat stability ideal for feed pelleting
- Reliable matrix values
- Optimize Feed™ Service and laboratory feed assay

What is Phyzyme® XP?

Phyzyme® XP is a fully patented, unique bacterial phytase developed by Danisco Animal Nutrition.

Phyzyme® XP is sourced from an *E.coli* species bacterium and is expressed in a *Saccharomyces pombe*.

What is phytate?

Phytate, also known as phytic acid and inositol hexaphosphate (IP6), is the main natural store of phosphorus contained in variable amounts in plants. Phosphorus is an essential mineral but when bound in dietary phytate is inaccessible to monogastric animals as they lack the digestive enzyme phytase.

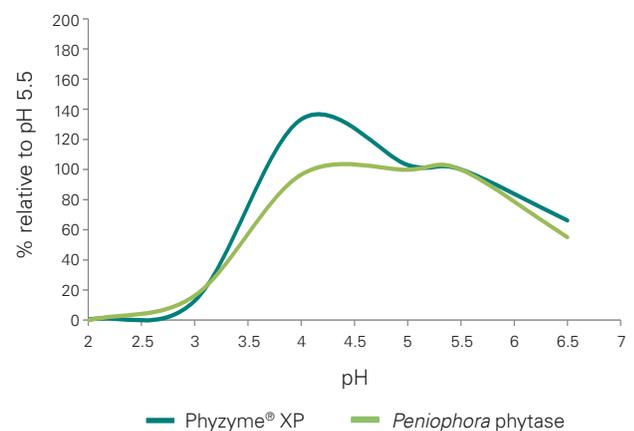
Why is phytate a problem?

Phytate is both a potential phosphorus source and an 'anti-nutrient' because of its ability to bind to essential nutrients needed by the animal. In the upper digestive system, at low pH, phytate binds to proteins and amino acids. Further down the digestive system, at higher pH levels, phytate binds to minerals such as calcium and trace elements.

Phytate interferes with digestion and stimulates the animal to increase its production of digestive secretions which is an energy and nutrient consuming process. The net result is a reduction in animal performance.

Furthermore, unabsorbed phytate phosphorus is excreted by the animal, creating a major problem for the environment.

Phytase activity at varying pH - Phyzyme® XP versus competitor



How does phytase help?

Phytase enzymes cleave phosphorus and the associated bound nutrients from the phytate molecule reducing its anti-nutrient effects. It is very important for phytase to start working rapidly at low pH levels which are found in the upper digestive system, e.g. pig's stomach and poultry gizzard. This minimizes the anti-nutrient effects of phytate throughout the digestive system and maximizes the time available for the animal to absorb the released nutrients.

Phyzyme® XP has an exceptionally high relative activity at low pH levels compared to fungal phytases. It also has enhanced resistance to pepsin produced by the animal. This means it works quickly in the upper digestive tract to both release phosphorus and overcome phytate's anti-nutrient effects.



Phyzyme® XP benefits

Phyzyme® XP rapidly degrades phytate, releasing more nutrients such as phosphorus, energy and amino acids compared to competitor phytase products. This offers many benefits in animal production.

Not all phytases are equal when countering the costly effect of phytate in the diet of animals. Phyzyme® XP has been consistently and successfully used by customers over many years. Recent studies show 500 FTU/kg feed of Phyzyme® XP is equivalent to >800 FTU/kg feed of competitor products (see graphs).

Feed cost savings

- Reductions in dietary inorganic phosphate, energy and amino acids
 - ◆ Fast and efficient breakdown of dietary phytate
 - ◆ Increased nutrient availability from phytate

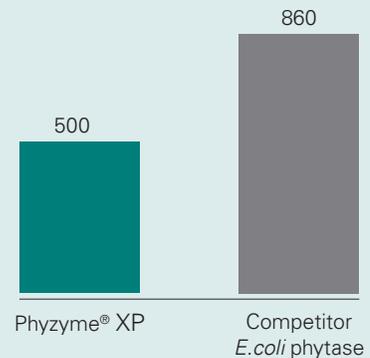
Production benefit

- Body weight gain and FCR benefits
 - ◆ Efficient removal of phytate anti-nutrient effects at low pH
 - ◆ Release of nutrients from phytate improves energy and amino acid availability
- Improved environment
 - ◆ Reduced phosphorus excretion

Confidence in use

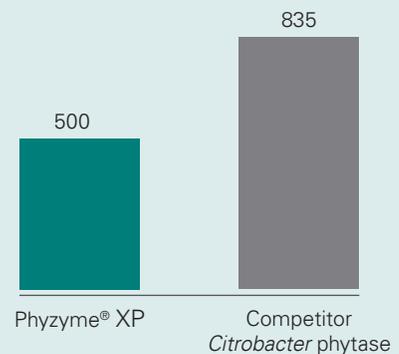
- Unrivalled heat stability
 - ◆ Phytase protected by unique Thermo Protection Technology (TPT) coating from Danisco Animal Nutrition
 - ◆ Phyzyme® XP TPT is heat stable to 95°C/203°F
 - ◆ Ideal for feed pelleting
- Reliable matrix values
 - ◆ Obtained from animal digestibility responses
 - ◆ Optimized according to the type of diet
 - ◆ Customer specific recommendations on Phyzyme® XP use
 - ◆ Over 10 years on the market
- Independent testing at external sites
- Laboratory assay
 - ◆ Quickly and specifically detects active Phyzyme® XP in feed

Bioequivalence* Phyzyme® XP versus competitor E.coli phytase (FTU/kg feed)



TR: XPSPB.74

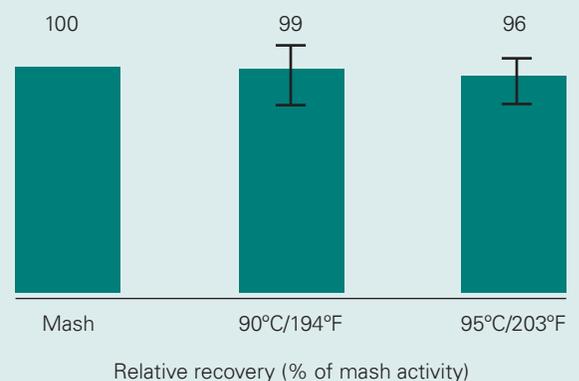
Bioequivalence* Phyzyme® XP versus competitor Citrobacter phytase (FTU/kg feed)



TR: XPSPB.75

*Based on tibia phosphorus measurements

Phyzyme® XP TPT heat stability during conditioning and pelleting



Supporting services for Phyzyme® XP

- Fully quantitative traditional laboratory assay for phytase
- Applications expertise of our technical and business support teams
- Optimize Feed™ Service - provides accurate and specific matrices leading to customised recommendations on Phyzyme® XP use in poultry and swine diets, to maximize profit from phytase use

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Product form

Phyzyme® XP is a phytase feed enzyme specifically developed to increase the digestibility of phytin-bound phosphorus, calcium, energy and amino acids in animal diets.

Phyzyme® XP TPT

Thermostable up to 95°C / 203°F during pelleting. An off-white to light tan, fine granular product. Packed in 25 kg multi-wall polyethylene lined paper bags or carton with polyethylene inner bag and in 1000 kg bulk (tote) bags.

Phyzyme® XP is also available in two other forms

Phyzyme® XP G – for mash feed only

A light brown, fine granular product on a wheat flour carrier. For optimum bioefficacy do not exceed conditioning and pelleting temperatures of 70°C / 158°F. Packed in 25 kg multi-wall paper bags and in 1000 kg bulk (tote) bags.

Phyzyme® XP Liquid – for post pelleting applications

A brown liquid. Packed in 200 kg and 1000 kg containers.

Contact your Danisco Animal Nutrition representative or distributor for recommendations about your specific application needs.

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