INTRODUCTION:

Nutrizyme®PHY-P (Phytase Premier I) [EC 3.1.3.26] is produced from *Aspergillus niger* through advanced fermentation and extraction technology.

It is thermostable and good tolerant to pepsin and trypsin. It can break down the undigestible phytic acid (phytate) and release digestible phosphorus, calcium and other nutrients. As an animal feed additive used in poultry and swine, it can enhance the nutritive value by liberation of inorganic phosphate from phytic acid (myo-inositol hexakisphosphate) , thereby, reduce phosphorus pollution to the environment.

DEFINITION OF UNIT:

1 unit of phytase equals to the amount of enzyme, which liberates 1 μmol of inorganic phosphorus in 1 min, from 5.0mmol/L sodium phytase at 37℃ and pH5.5

ENZYME ACTIVITY:

Phytase activity：5000 u/g, 10,000 u/g

Products can be customized according to customer ‘s demand.

APPEARANCE: White or Yellowish powder

DOSAGE:

Used for Complete feed	Growth stage		Dosage: (g/MT)	
			⩾5000 u/g	⩾10, 000 u/g
Swine	20-35kg		150	75
	More than 35kg		120	60
Poultry	Whole period		200	100
Layer	Brooding period		200	100
	Laying period	Laying hens	60	30
		Laying duck	80	40

Dilute the concentrated enzyme before usage

ENZYME PROPERTIES:

1. Enzyme properties at different pH conditions

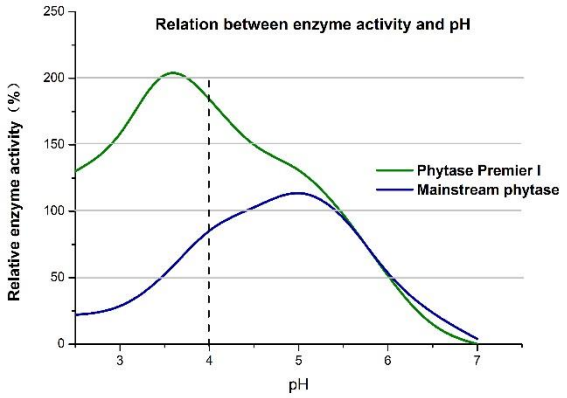
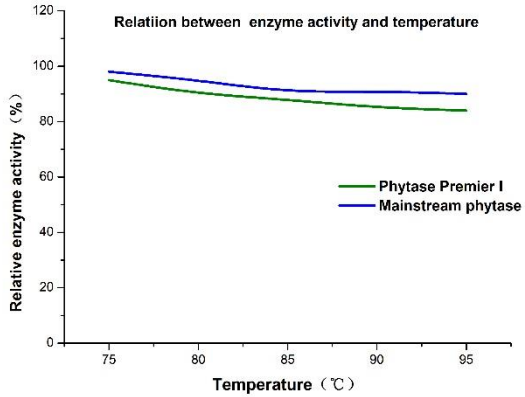


Fig. 1.Relation between phytase activity and pH

The optimum pH of Sunson Phytase Premier I was 3.5 and the pH range was from 2.5 to 5.5. Compared to the current mainstream phytase in international market, Sunson phytase Premier I showed higher activity between pH2.5 to 5.5, which was more suitable for the digestion of phytic acid in animal gastrointestinal tract.

2. Temperature stability



(water bath for 3min under 75℃~95℃)

Fig. 2.Relation between phytase activity and temperature

The activity of Phytase Premier I could maintain 80% or more, which results showed the phytase had a very good heat resistance.

3. Stability under the feed pelleting process

An experiment was conducted in a feed factory in Shandong province. The phytase was fixed with the swine’s feed, conditioned for 90s at 85℃、0.4MPa and pelleted for 10s in a Modulator (AG,CH-9240, Bühler Co., Wuxi China), testing the thermostability during feed pelleting process.

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Table 1. Thermostability under the feed pelleting process

Source	Phytase Premier I	Mainstream phytase
retention rate	84%	88%

Phytase Premier I maintained high activity under feed pelleting process.

3. Tolerance to endogenous protease

Table 2 Resistance to pepsin and trypsin

Condition	Resistance to pepsin		Resistance to trypsin	
	buffer	buffer+ pepsin	buffer	buffer+ trypsin
pH	2.5	2.5	6.5	6.5
Temperature	40℃	40℃	40℃	40℃
Time	1.5h	1.5h	2h	2h
Protease concentration	—	1mg/ml	—	2.5mg/ml

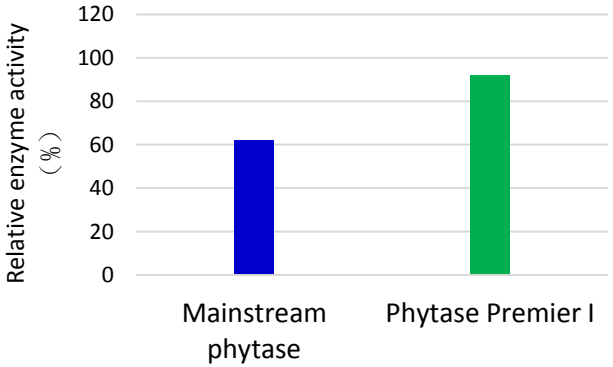

Fig. 3. Resistance to pepsin

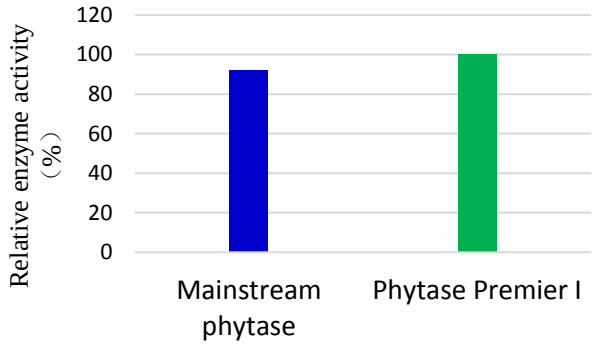

Fig. 4. Resistance to trypsin

Compared to the current mainstream phytase in international market, Sunson phytase Premier I has a better resistance to endogenous protease.

5. Phosphorus release capacity

The phytase was mixed with soybean meal, incubated at 40℃ for 4h at pH 3.0, then transferred to pH 6.5, 40℃ for 4h. Phosphorus release was determined as below.

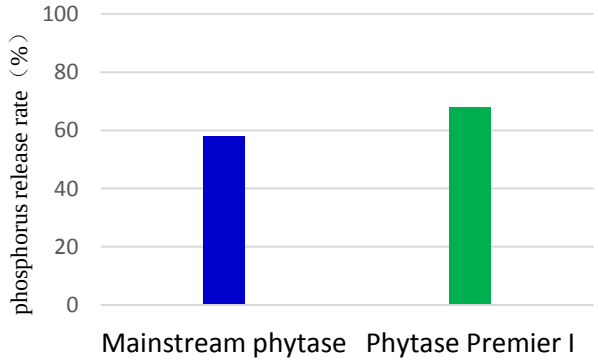

Fig. 5 Phosphorus release capacity

Results showed Phytase Premier I had much higher phosphorus release capacity than the mainstream phytase.

FUNCTIONS & BENEFITS:

1. Effectively hydrolyze phytic acid in the plant materials, increase the phosphorus utilization rate of feed raw material;
2. Reduce the dosage of inorganic phosphorus and save cost of animal feed.
3. Break phytanate frame, release nutrients, like: starch, protein, mineral elements, increase the utilization rate;
4. Improve the absorption phosphorus and reduce environmental pollution.

ADVANTAGES:

1. Produced through advanced liquid fermentation and extraction technology;
2. Good resistance to endogenic protease and gastric acid;
3. Thermostable, wide pH range, catalyzing effectively in animal gastrointestinal tract.
4. Even granular, appropriate grain size, blend equally;
5. Highly concentrated and cost saving.

PACKAGE&STORAGE:

1. Packaging specification: 25 KGS/Bag.
2. The shelf life is 12 months under 20℃.
3. Damp and insolation should be avoided. Store it in a cool, dry and ventilated place.

Note：The Mainstream phytase means the current mainstream phytase in international market.

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