



**HUVEPHARMA**

We add performance to your business



**Hostazym<sup>®</sup> P**

## Hostazym® P

*Hostazym® P is a new generation phytase developed by the University of Cornell (USA). Researchers at this university discovered an E-coli bacteria which was producing a very potent 6-phytase.*

*They identified the gene responsible for expressing the phytase production, isolated it, and transferred it into a yeast, Pichia pastoris. This yeast, with the genes encoding for phytase production inside, now is capable of producing large quantities of the E-coli phytase, Hostazym® P.*

*Hostazym® P is used in feeds for monogastrics to hydrolyse phytic acid and release phosphate groups, which thus come available for the animal, and can be absorbed in the lower digestive tract.*

*Because monogastric animals lack the enzyme phytase, normally they are not capable of breaking down phytic acid and thus cannot use the phosphorus stored in this molecule.*

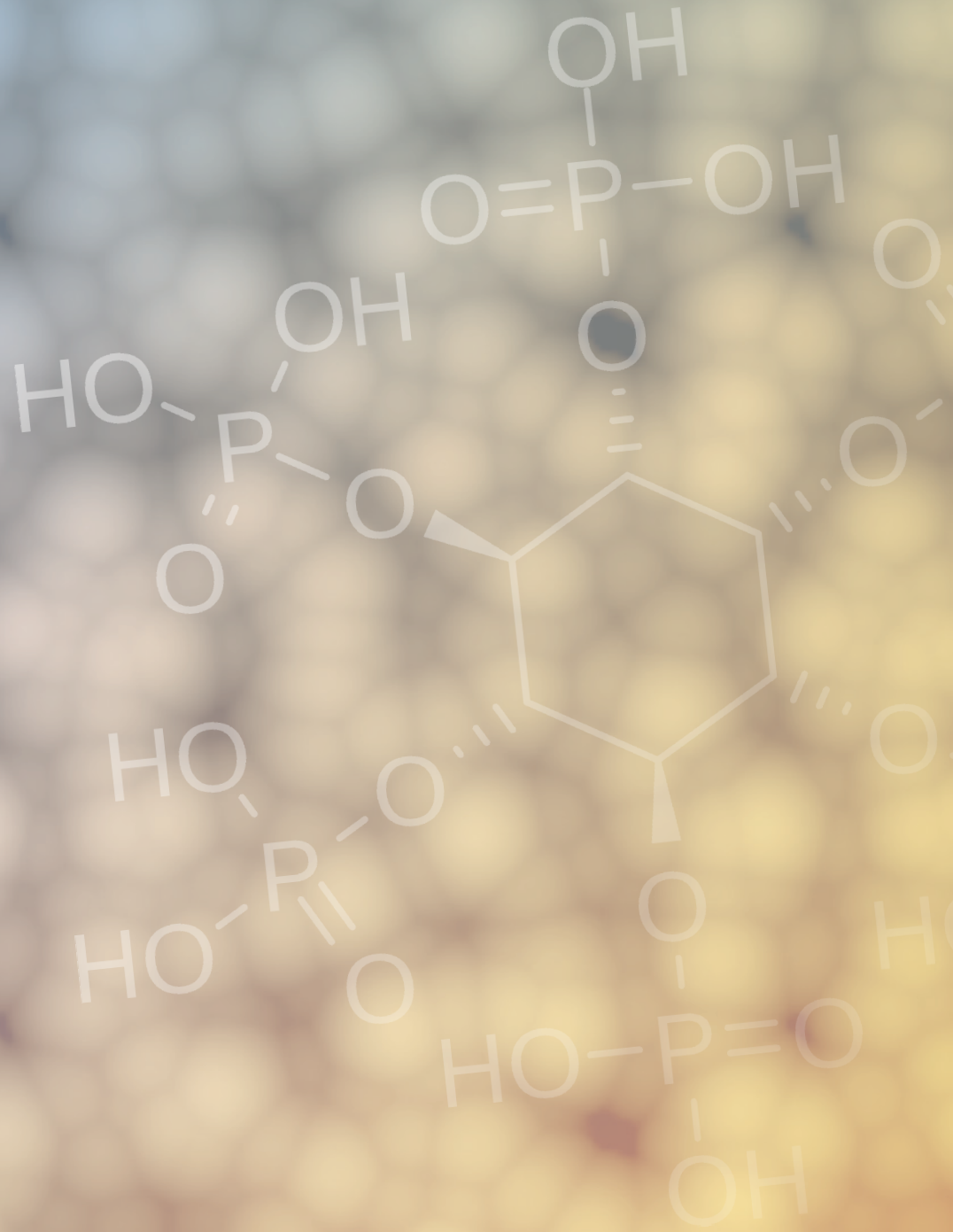
*By adding Hostazym® P to the feed, the phytate bound phosphorus, which is about 70% of all phosphorus in plant raw materials, can be released in the animal.*

*In this way the extra phosphorus gift, by adding inorganic phosphorus from monocalcium- or dicalcium phosphate, can be reduced.*

*Hostazym® P improves the digestibility of the natural present phosphorus from phytic acid in vegetable raw materials in the feed.*

*This saves feed costs, but also lowers the output of phosphorus via the litter to the environment.*



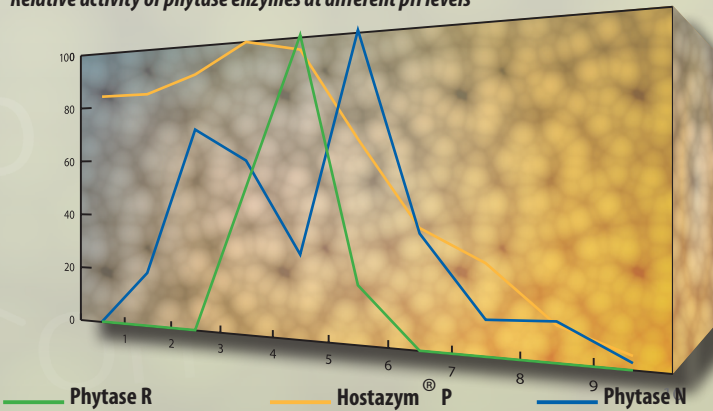


## pH dependency

Phytases all have their own specific optimal pH level, at which they function optimally. It is well known that phytic acid (the substrate for phytases to work upon) must be in solution for the phytase to be capable to hydrolyse the phosphate groups from the inositol ring structure. Phytic acid is largely in solution at pH levels below 5,5, which means in vivo only in upper digestive tract (the stomach area). As soon as the feed/chime is entering the duodenum, the pH goes up to 6 and higher, which make the phytic acid form a complex with calcium. This complex precipitates and phytase is largely hindered to hydrolyse the phosphate groups.

The optimum activity of Hostazym® P can be found at pH range of 1-5,5. This is a very broad range, which gives the advantage to Hostazym® P that it is capable of hydrolysing phytic acid in the whole upper digestive tract area. Also the effectivity of Hostazym® P in this range is very high, which makes Hostazym® P operational for the full retention time of the feed in the upper digestive tract area. Because of this the total phosphorus release by Hostazym® P is amongst the highest of all phytases in the market available.

Relative activity of phytase enzymes at different pH levels

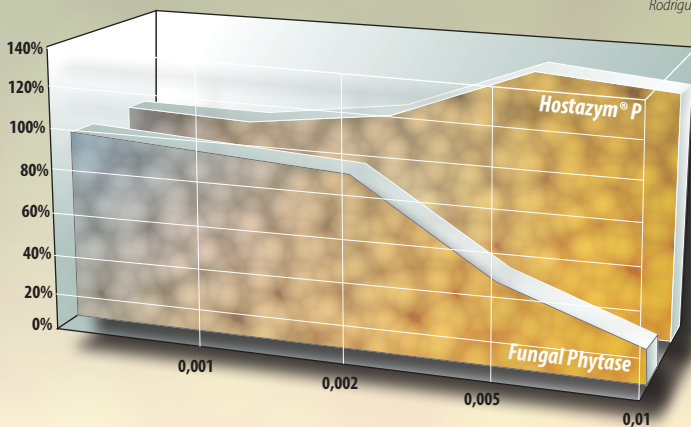


## Pepsin break down sensitivity

Besides pH also degradation of the phytase by pepsin is a factor to consider. Phytases are proteins, and in the normal digestive system of animals, proteins are degraded by pepsin into smaller pieces to be digested. Pepsin is especially active at low pH levels in the stomach area, and it can break down phytase. Research shows that Hostazym® P is almost fully resistant against this degradation by pepsin, which means that actually the full quantity of Hostazym® P that is present in the stomach will be effective, no losses of effectivity due to the pepsin break down of Hostazym® P are seen.

Relative amount of iP released from soyabean meal (%) influenced by pepsin concentration

Rodriguez, et al, 1999



## Thermostability of Hostazym®P

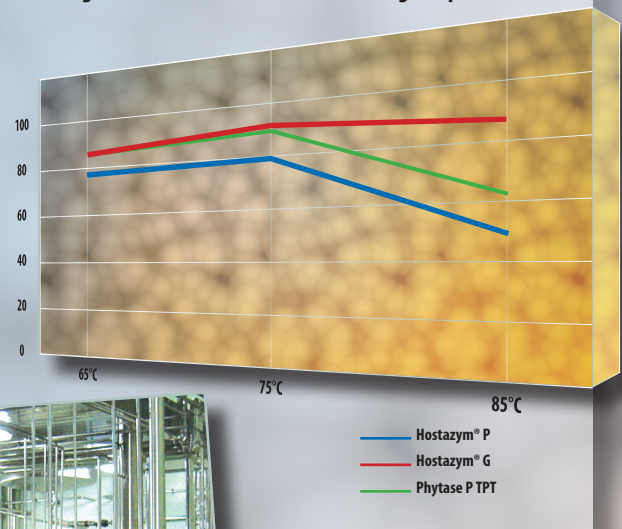
Thermostability of phytases is a hot topic. It is well known that phytases in general are sensitive for inactivation by heat, more than xylanases for instance. This implicates that at pelleting temperatures of 75-80 °C important losses of phytase activity can take place. To prevent this loss of activity, the phytase has to be protected against the heat-treatment, without protecting it too good, otherwise release of the phytase in the animal will be hindered.

To protect Hostazym®P against the temperature at pelleting conditions up to 85 °C, a coating has been developed. This coating has shown to protect the Hostazym®P against this pelleting temperature during processing, but not hinder the release of the Hostazym®P in the animal. This is backed up with many trials performed with the coated Hostazym®P product which all show good effectivity and response in vivo.

The non-coated Hostazym®P is a granulated product, produced in a patented microgranulation process. In this process the active ingredient, Hostazym®P, is fully embedded in a matrix of starch which protects the Hostazym®P against all kinds of influences from chemicals to adverse storage conditions.

For processes where liquid phytase is preferred, such as higher pellet temperature, liquid Hostazym®P is available for post pelleting application (PPLA).

**Pelleting recoveries at different conditioning temperatures**





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### Product information

*Hostazym® P is a new generation E-coli based 6-phytase. Hostazym® P is available in microgranulated, coated and liquid form for application in animal feeds*

Product	Concentration	Product form
<b>Hostazym® P 5000 G</b>	<b>5,000 units per gram</b>	<b>Microgranulate</b>
<b>Hostazym® P 10000 G</b>	<b>10,000 units per gram</b>	<b>Microgranulate</b>
<b>Hostazym® P 5000 PF</b>	<b>5,000 units per gram</b>	<b>Coated</b>
<b>Hostazym® P 10000 PF</b>	<b>10,000 units per gram</b>	<b>Coated</b>
<b>Hostazym® P 5000 L</b>	<b>5,000 units per ml</b>	<b>Liquid</b>
<b>Hostazym® P 10000 L</b>	<b>10,000 units per ml</b>	<b>Liquid</b>
<b>Hostazym® P WSP</b>	<b>900,000 units per gram</b>	<b>Powder</b>



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