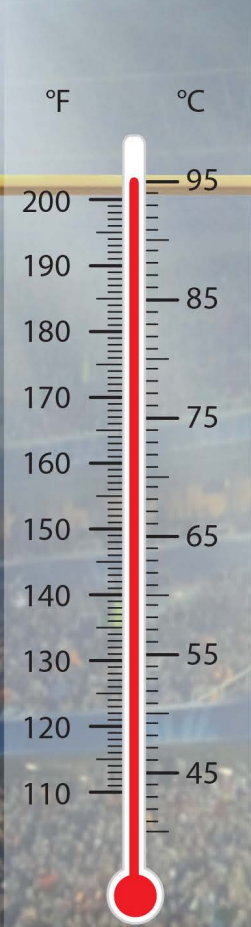


The logo for OptiPhos Plus features a cluster of white circles of varying sizes on the left, resembling a molecular structure or a group of cells. To the right, the text "OptiPhos<sup>®</sup> Plus" is written in a clean, white, sans-serif font against a dark olive green background.

# OptiPhos<sup>®</sup> Plus



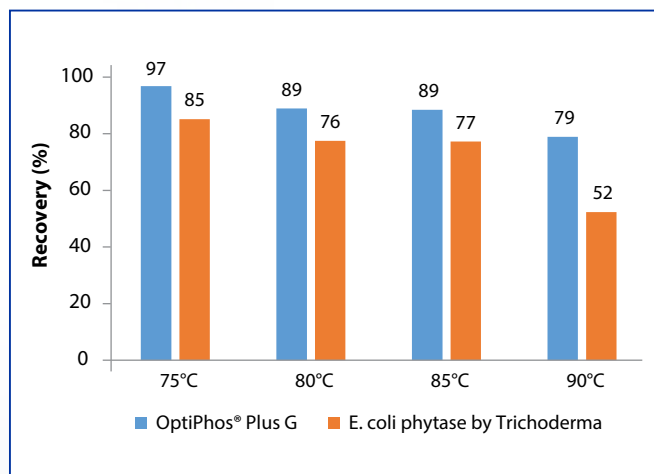
**BEAT**  
*the* **HEAT**

# Highly stable....

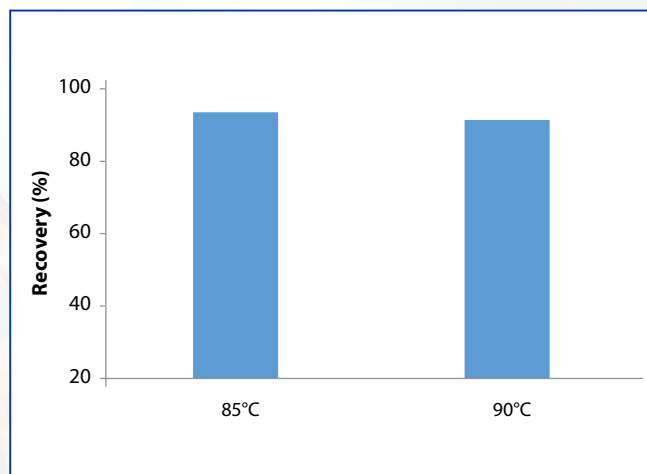
## High intrinsic heat stability

OptiPhos® Plus has shown to have high intrinsic heat stability:

- OptiPhos® Plus G can be used for pelleting up to 85°C
- OptiPhos® Plus CT is the preferred form when pelleting temperature exceeds 85°C up to 95 °C



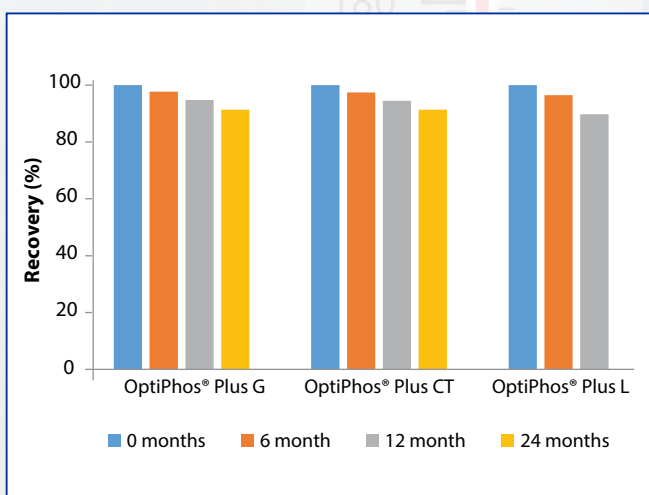
Heat stability of OptiPhos® Plus G vs a claimed intrinsic heat stable phytase



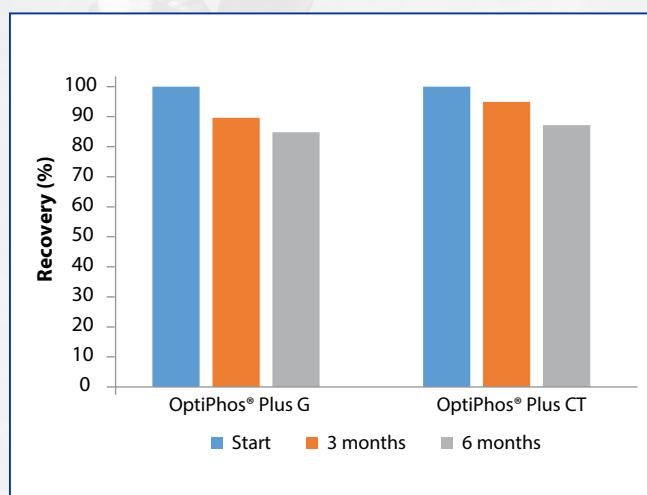
Heat stability of OptiPhos® Plus CT at elevated temperatures

## Stability as product and in premix

Not only having a high thermostability, both OptiPhos® Plus G and CT demonstrated strong stability in premix, even in a very concentrated premix (0.1 %). Due to the fat coating, OptiPhos® Plus CT has shown to be the preferred form for incorporation in a concentrated premix kept for prolonged storage at elevated (> 25°C) temperatures.



Stability of the three forms of OptiPhos® Plus when stored at 25°C (EFSA report)



Recovery after 3 and 6 months at 25°C of OptiPhos® Plus G and CT in a 0.1 % premix containing choline chloride (EFSA report)

## The advantages of A STABLE PHYTASE:

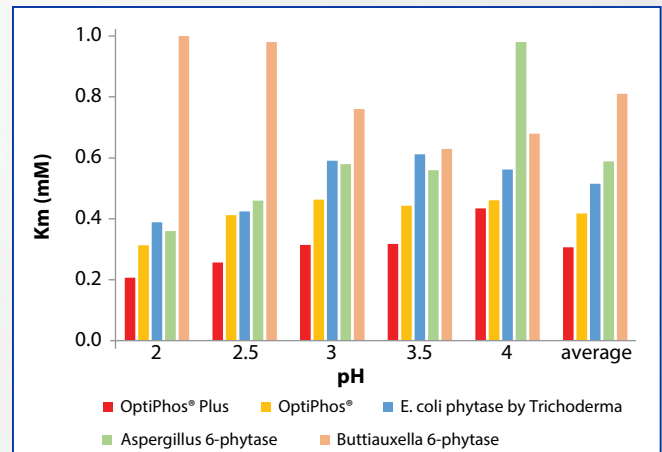
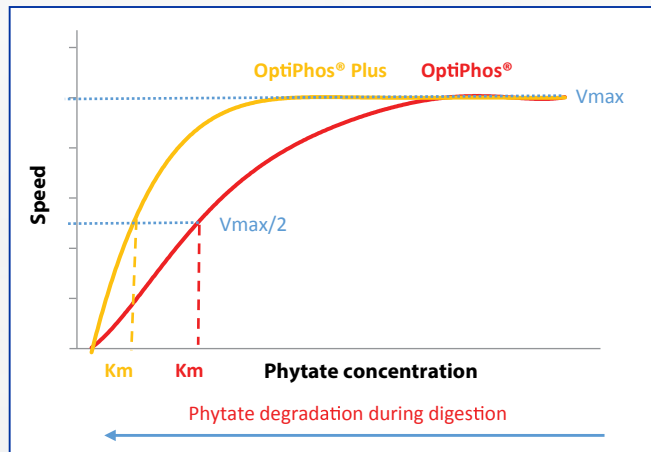
- No losses during pelleting at temperatures exceeding 85°C (up to 95°C)
- Highest security of survival at fluctuating pelleting temperatures
- Longer shelf life as product, in premix and in feed

## High affinity and speed

OptiPhos® Plus has the ideal characteristics of OptiPhos® (PPS concept): ideal pH profile in the range of pH 1-4, a high resistance to pepsin degradation and fast working.

The speed of phytate degradation by OptiPhos® Plus is maintained even when phytate concentration in the gizzard/stomach drop to very low levels. This is called the affinity, and is determined by the  $K_m$  value, which is the concentration of phytate at which the phytase still works at 50 % of its maximum speed.

OptiPhos® Plus has shown to have a low  $K_m$  value, indicating it can keep its high speed up long even when phytate concentrations drop to a low level. This is also why OptiPhos® Plus has high P matrix values and is specially well suited for superdosing applications.

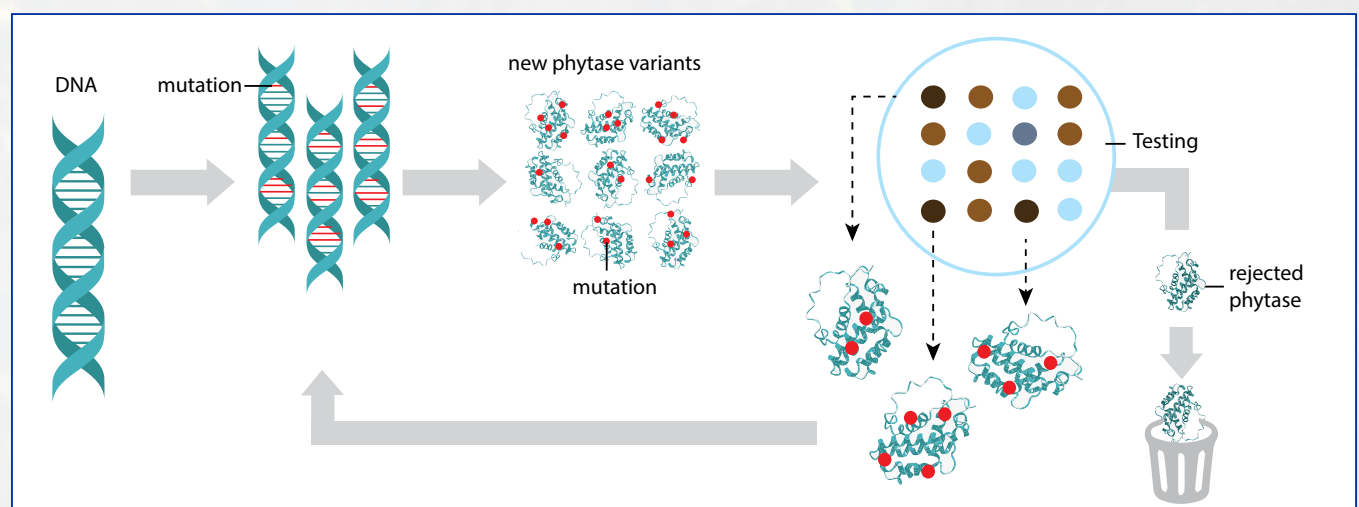


OptiPhos® Plus having higher affinity (lower  $K_m$ ) explaining faster phytate breakdown and higher P matrix values

OptiPhos® Plus has a higher affinity (lower  $K_m$ ) than other phytases at different pH values

## Newest technology for protein engineering

OptiPhos® Plus is the latest generation phytase developed by Huvepharma® based on its know-how of enzyme technology. It was developed by inducing random modification in the DNA of OptiPhos® combined with rapid through-put screening for new and improved characteristics. The major target was improved intrinsic thermal stability and higher affinity while keeping other favourable OptiPhos® properties intact.



## The advantages of A FAST PHYTASE:

- Highest savings of inorganic phosphate sources, so reducing feed cost
- A faster elimination of the anti-nutritional factor phytate, so demonstrating superdosing effects already at double dose
- Minimizing the environmental impact by reducing the excretion of phosphorus

## Services

The Global Technical Enzyme team is at your support to provide advice and recommendations on how to formulate with OptiPhos® Plus. Laboratory assays are available for analysis of feeds and premixes.

## Product information

- **OptiPhos® Plus G** is a granulated product, produced via the Huvepharma® patented microgranulatoin process, resulting in a dust-free product. The product is intrinsically stable and recommended for pelleting till 85°C.
- Using a specifically developed coating technology, **OptiPhos® Plus CT** is produced and recommended for pelleting till 95°C.
- **OptiPhos® Plus L** is the liquid form, to be used for post pelleting application.

Product	Concentration (FTU/g)	Product form	Product stability	Pellet stability
OptiPhos® Plus G	5 000, 10 000 and 50 000	Granulate	Min. 2 years	to 85 °C
OptiPhos® Plus CT	5 000 and 10 000	Coated	Min. 2 years	to 95 °C
OptiPhos® Plus L	5 000 and 10 000	Liquid	Min. 1 year	



**OptiPhos® Plus**  
Beat the Heat