custom enzymes

ORGANIC ENZYMATIC FEED ADDITIVES FOR ANIMALS

Certain groups of enzymes are sought after because of their ability to improve animal performance and reduce nutritional variations in raw materials. Specifically, protease enzymes have the potential to improve protein digestibility.

Proteases break down complex proteins into shorter proteins, called peptides, and amino acids, which are the building blocks of proteins. They are also able to break down proteins that bind starch in food ingredients, making more of the energy in starch available to the animal.

Animal Feed Dosage and Content

Multi Enzymes Blend, **CUSTOM E - Animal Feed.**

CUSTOM E - PROPLUS includes 9 enzymes which are protease, lipase, xylanase, cellulase, beta-glucanase, alpha amylase, gluco amylase, phytase and pectinase.

The standard packaging would be a 25 kg HDPE drum.

The recommended dosage for our **CUSTOM E - PROPLUS is 300 - 400 gm / Tonne.** The final dosage must be optimized according to the needs.

Please find below the enzymatic activities of each of the enzymes in the formulation:

1. **Cellulase: 4,000,000 – 6,000,000 U/kg**

   Hydrolyzes cellulose (fibers)

2. **Xylanase: 3,000,000 – 4,000,000 U/kg**

   Hydrolyzes xylan to xylose

3. **Beta-glucanase: 1,000,000 – 1,200,000 U/kg**

   Beta-glucan hydrolysis

4. **Alpha Amylase: 4,000,000 – 6,000,000 U/kg**

   Hydrolyzes starch to dextrin

5. **Protease: 1,500,000 – 1,800,000 U/kg**

   Hydrolysis of proteins into amino acids

6. **Lipase: 300,000 – 450,000 U/kg**

   Hydrolyzes fats into fatty acids

7. **Pectinase: 600,000 – 750,000 U/kg**

   Pectin Hydrolyses

8. **Mannanase: 250,000 – 350,000 U/kg**

   Mannan hydrolysis

9. **Phytase:1,200,000 – 1,600,000 U/kg**

   Phytic acid hydrolysis

PHYTASE ENZYME

It catalyzes the hydrolysis of indigestible phytic acid into an organic form of phosphorus.

- Degradation of phytic acid
- Improves phosphorus absorption
- Increases the availability of food nutrients

CELLULASE ENZYME

It is a complex mixture of enzymes that contains endo, exo and beta activities. It facilitates the digestion of cellulosic fiber in the diet.

- Digestion of fiber
- High energy generation
- Improves digestion in animals

HEMICELLULASE ENZYME

It improves the nutritional value of foods by breaking down non-starchy polysaccharides, mainly xylase, found in foods.

- C5 Sugars digestion
- Prebiotic effect
- Reduces oxidation stress

PROTEASE ENZYMES

It helps to digest protein in the diet.

- High power generation
- Wide range of protein management
- Minimizes the effect of anti-nutritional factors

Enzyme-based formulation to improve digestion

The digestive system of the animal is not totally effective. Poultry cannot digest about a quarter of the feed it receives because the food ingredients contain non-degradable harmful factors that hinder the digestion process and the animal lacks the enzymes necessary to degrade certain complexes in the diet.

Supplementing foods with enzymes improves its nutritional value, thereby increasing the efficiency of digestion. Animal feed enzymes help break down fiber, phytates and other copolymers naturally present in various food ingredients. The presence of these can lead to a decrease in meat or egg production and lower feed efficiency and can cause digestive disorders.

Food enzymes improve the ability of meat and egg production by improving nutrient utilization and reducing animal faeces. The challenge is therefore to use these exogenous food enzymes as efficiently as possible to reduce feed costs without compromising animal health.

The following table lists the main animal feed enzymes and their benefits:

Enzyme problems in animal feed:

Phytase: Phytic acid is problematic for the animal because it binds minerals and amino acids that become unavailable to the animal.

Benefit: Reduces phosphorus excretion

Carbohydrases: The class of enzyme carbohydrases includes xylanases, glucanases and Amylases. They act in the stomach to break down and degrade carbohydrates such as fiber, starch and non-starchy polysaccharides into simple sugars that provide energy for use by the animal.

Xylanase: attacks the arabinoxylan structure of corn or wheat, allowing the animal to absorb its components as a source of energy.

Benefit: limits the need for additional fat or energy in the final diet

Protease: Improves protein digestion and increases amino acid availability, which helps to release valuable nutrients. Proteases help producers manage the nutritional risks associated with feed quality and enable them to make the best use of all available food ingredients.

Animals consuming a traditional diet based on corn and soybean meal cannot use100% of the protein ingested.

Adding a protease enzyme to a corn and soybean meal diet will improve amino acid digestibility and animal performance.

Benefit: Improved growth and performance of animals and negative effects of undigested proteins in the hindgut

How many enzymes need to be added to the diet?

The ratio of the enzyme to the feed to begin with is 300-400 grams per ton, or as a good starting point, 1 kg per 3 tons of feed added and mixed with the feed.

This can then be optimized when the results are seen and adapted for the three main stages of growth.

Based on an average of 142 chickens per ton of feed in 8 weeks and 1 kg of enzymes per 3 tons of feed, we have 426 chickens fed from 1 kg of enzymes, or $0.02 per chicken

The cost of enzymes is $10 per kg FOB available in 25 kg HDPE containers

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