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Dyadic® Xylanase XPG

PRODUCT #537

(For Consideration in Animal Feed Applications)

I. INTRODUCTION:

Dyadic Xylanase XPG is a Granulated powder acid-neutral endo-1,4-β-D-xylanase (E.C. 3.2.1.8) product from *Trichoderma longibrachiatum* (formerly *T. reesei*). Products of this origin are used world-wide as processing aids in baking, starch-gluten separation, alcohol fermentation and animal feed. Its high level of xylanase / beta-1,3-1,4-glucanase / cellulase allows it to break down non-starch polysaccharides (NSP) including arabinoxylans and beta-glucans in poultry, swine, ruminant and aquaculture diets, containing high amounts of wheat, rye, barley, triticale and other certain cereals. It should be noted, that without such enzymes the broiler diets cannot accommodate more than 20% wheat, 15% rye, or 15% barley.

II. PHYSICAL PROPERTIES:

Appearance:	Off-white powder granulate. (Note that color does not affect or reflect activity.)	
Odor:	Slight fermentation odor.	
pH (1% soln):	4.5 ± 1.0	
Density: n/a		
Guaranteed Activity:	Xylanase	90,000 to 110,000 Units/g
Side Activities (typical):	Beta-Glucanase	30,000 to 36,000 Units/g
	Cellulase	115,000 to 140,000 Units/g
Additional Side Activities:	pectinase, mannanase, xyloglucanase, laminarase, β-glucosidase, β-xylosidase, α-L-arabinofuranosidase, amylase, protease	

III. PRODUCT CAPABILITIES:

When run as directed in this bulletin, **Dyadic Xylanase XPG** can be utilized to accomplish the following:

1. Decrease the viscosity of arabinoxylans and β-glucans in high-wheat and high-barley poultry diets to minimize wet droppings and improve solid fat digestion.
2. Break down cell walls to increase energy utilization from high-wheat and high-barley poultry, pig, and aquaculture diets and accessibility of lipid-soluble ingredients.
3. Increase daily weight gain (DWG) and improve feed conversion ratio (FCR)
4. Include higher rates of viscosity reducing cereals and their by-products, thus reducing the total cost of the diet.
5. Reduce water intake, which improves litter quality and reduces dirty eggs.
6. Improves the microbial balance in the gut and reduces risk of contamination with pathogenic bacteria.

IV. PROCESSING CONDITIONS: GENERAL

The use of enzyme concentrate typically implies two separate steps:

1. Dilution of the concentrate by an enzyme distributor (formulator) at a rate of 1:10 to 1:20 to obtain a final feed enzyme product with proprietary product label. Other enzymes, vitamins, minerals, probiotics, proteins and medicinal components can be mixed in at this stage.

2. Inclusion of the final enzyme product into the poultry, swine, and aquaculture diets by the final consumer at the feed mill.

The concentrate is designed to be included into diluted enzyme premixes intended for the final consumers - specialized feed mills and poultry, swine, and fish growers mixing their own feed. The degree of dilution should be based on the capabilities of the final customers to accurately dose and distribute the liquid enzyme product through the volume of feed. The recommended final dosage of **Dyadic Xylanase XPG** is **6 to 50 grams/ton of feed**. However, most of the feed mills cannot mix in a component if the amount is less than 500 grams of diluted enzyme per ton of feed, which dictates a typical dilution rate of 1:10 to prepare the end enzyme product starting from **Dyadic Xylanase XPG**.

The product can be diluted, as needed, to match the dosing capabilities of the customer, using ground rice hulls (preferred filler, due to its low moisture content), wheat, rye, or barley flour or by-products.

When included into the final poultry and swine diets, the product can undergo the sterilization for several minutes by pelletizing the feed at a temperature not exceeding 80°C.

Optimal performance of the enzymes in **Dyadic Xylanase XPG** for application to poultry and swine diets is obtained by diluting this enzyme concentrate. The enzyme is stable under acid stomach conditions in the presence of endogenous proteases and starts performing in the intestine. In analytical tests the maximal enzyme activity is displayed at temperature of 40^{o} C – 57^{o} C and pH of 4.2-6.5.

V. STORAGE CONDITIONS / ACTIVITY:
Dyadic Xylanase XPG has less than a 10% activity loss after 12 months when stored at 25^{o}C (75^{o}F - 77^{o}F) out of direct sunlight and in the original, closed container (protect from humidity). **Dyadic Xylanase XPG** also has less than a 10% activity loss after 6 months when stored at 43°C (110°F).

VI. INACTIVATION:
Dyadic Xylanase XPG can be inactivated by raising the pH above 8.0 or the temperature above 90°C or a combination of the two.

VII. PACKAGING:
Dyadic Xylanase XPG is packaged in 25 kg fiber drums.

VIII. TECHNICAL SERVICE:
Information covering specific applications for this product is available from your Dyadic International sales/technical representative. We will work with your technical personnel to resolve problems and optimize your process.

IX. SAFETY AND HANDLING:
For detailed information please refer to the **Dyadic Xylanase XPG** MSDS available upon request.