



High Quality Reagents for Animal Feed Analysis



Xylazyme & Xylazyme AX
The universal methods for the
measurement of xylanase

Megazyme has recognised the need for simple and specific enzyme assay kits and reagents for the measurement of enzymes, carbohydrates and anti-nutritional components in animal feeds

Xylanase

Starch

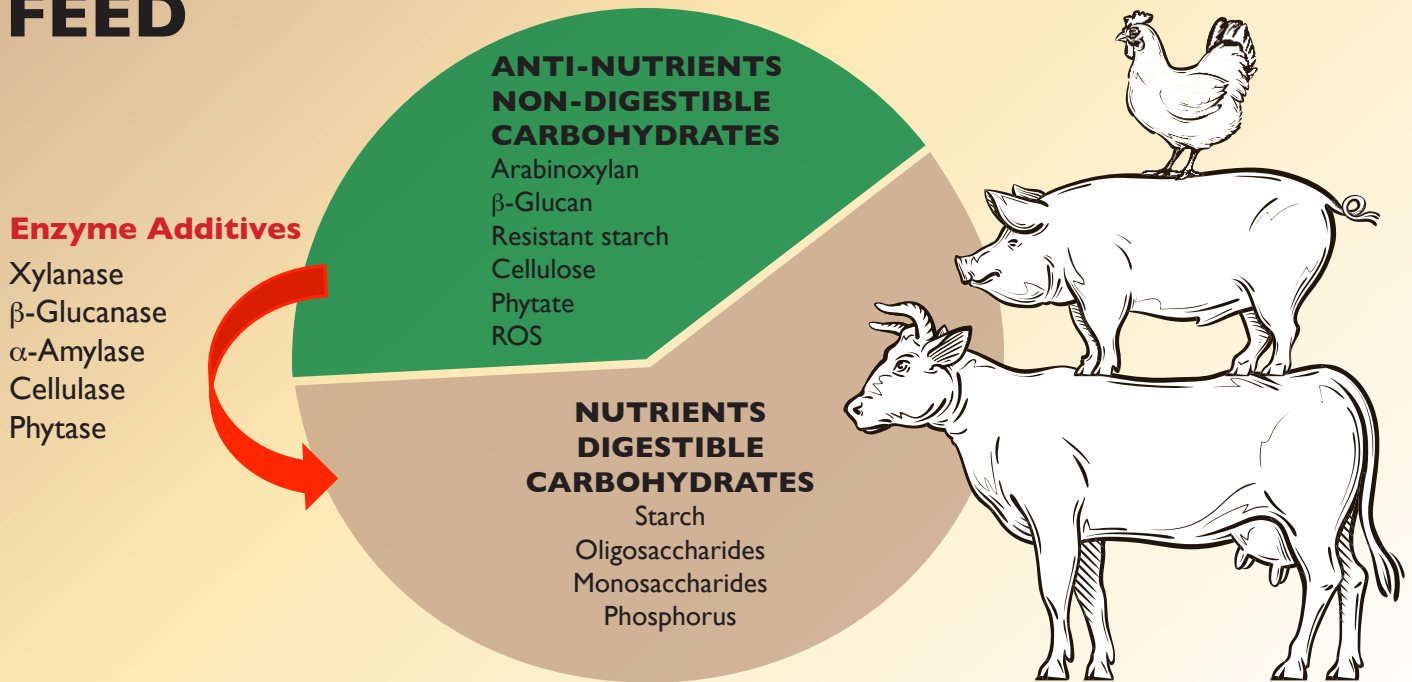
β -Glucanase

Phytic Acid

NUTRITIONAL QUALITIES OF FEED

Grains and legume seeds are major components of feed formulations and contain a range of anti-nutrients. Examples include phytic acid and dietary fiber components such as β -glucan, arabinoxylan, cellulose, resistant starch and raffinose-oligosaccharides (ROS). These anti-nutrients are detrimental to the optimal digestibility of feed by animals and need to be measured accurately. The addition of appropriate enzymes to feed degrades these anti-nutrients, thereby improving the digestibility of the feed and increase its nutritional value.

FEED



Megazyme has developed accurate and specific methods and substrates for the measurement of the **nutrients**, **anti-nutrients** and **key enzymes** in feed.

NUTRIENTS

Total starch	• K-TSTA assay kit
Fructose / Glucose	• K-FRUGL assay kit

ANTI-NUTRIENTS

β-Glucan	• K-BGLU assay kit
Arabinoxylan	• K-XYLOSE assay kit
Resistant Starch	• K-RSTAR assay kit
Phytate	• K-PHYT assay kit

ENZYMES

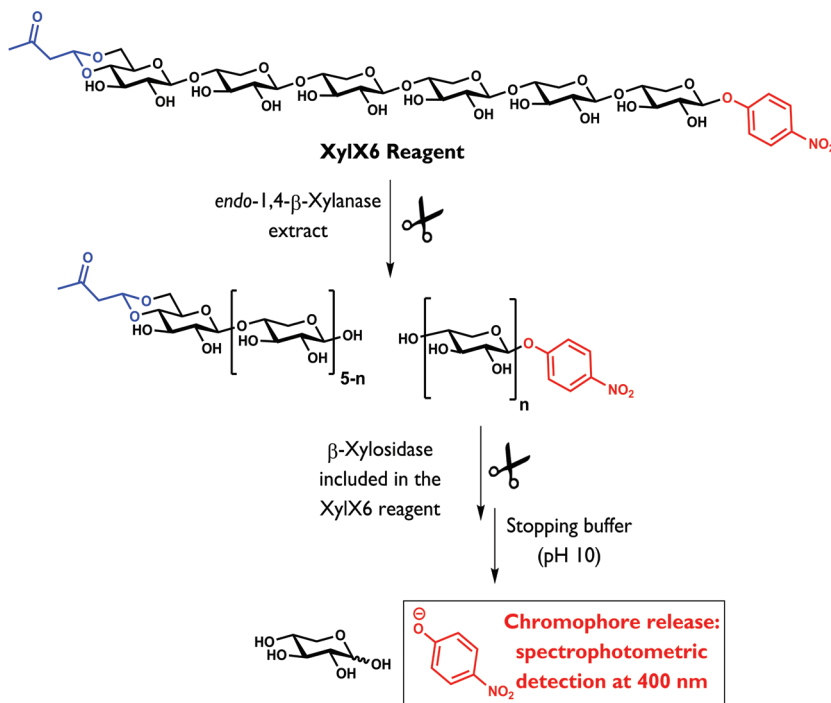
Xylanase	• Xylazyme & Xylazyme AX tablets	• K-XylX6 assay kit
β-Glucanase	• β -Gluczyme tablets	• K-MBG4 assay kit
α-Amylase	• Amylazyme tablets	• Ceralpha assay kit
Cellulase	• Cellazyme tablets	• K-CellG5 assay kt

Megazyme is revolutionizing how enzymes are measured with the launch of its new range of colourimetric oligosaccharide substrates

In the past, enzyme measurement was performed using reducing sugar enzyme assays (eg. DNSA) employing polysaccharides as substrates. In the 1980s, reducing sugar assays in the feed industry were replaced with procedures involving Megazyme's dyed polysaccharide substrates (**Xylazyme**, **β -Glucazyme**, **Amylazyme** etc). Tablet tests are extremely useful for the rapid, convenient and accurate assays of important enzymes such as xylanase, β -glucanase, α -amylase etc.

Despite the huge advantages of tablet tests, enzyme measurements obtained with them must always be related back to the benchmark 'reference method' which is based on reducing sugar assays.

Megazyme's new XylX6 assay for the measurement of xylanase will surely become the new industrial 'reference method' given its many advantages over the traditional reducing sugar method.



XylX6 advantages:

- Bespoke chemical structure:
- Specific for *endo*-xylanase ✓
- Analysis of crude extracts ✓
- Analysis of purified enzymes ✓
- Control standards included ✓
- Chemically-defined substrate:
- No variability between substrate batches ✓
- Suitable for automation ✓
- Quantitative assay, high sensitivity ✓
- Thermal stability up to 50°C ✓

XylX6 ASSAY CONDITIONS:

- 1) Incubate 50 μ L of XylX6 reagent solution with 50 μ L of xylanase extract (0-100 mU/mL of extract) in buffer at 40°C.
- 2) Terminate incubation after 10 min with 1.5 mL of Tris buffer (2% w/v, pH 10).
- 3) Read absorbance at 400 nm which is directly related to xylanase activity.

Better still!

Megazyme have developed similar assay kits for all of the important polysaccharide degrading enzymes found in animal feed.

- α -Amylase (K-CERA, K-AMYLSD)
- β -Glucanase / Lichenase (K-MBG4)

- endo*-Cellulase (K-CellG5)
- endo*-Xylanase (K-XylX6)

Analyte	Cat. No.	Analyte Significance	Advantages Of Megazyme Test Kits
Important Feed Analytes			
Acetic Acid	K-ACETRM	Commonly found in feed or fermented feed	K-ACETRM is a rapid, manual assay kit employing AK and phosphotransacetylase. Stable reagents
Ammonia	K-AMIAR	Commonly found in feed or fermented feed	Rapid reaction rate (~ 3 min at room temperature). Ideal for manual and auto-analyser applications. Stable reagents
L-Lactic Acid	K-LATE	Commonly found in fermented feed	Rapid reaction, stable reagents. Ideal for manual and auto-analyser applications
Phytic Acid	K-PHYT	Found in most plant materials. Major form of bound phosphate in plant materials	Novel procedure. Rapid reaction, stable reagents
Enzymes			
α -Amylase	K-CERA	A key enzyme in most feeds and plant products	Novel assay employing a defined oligosaccharide substrate. High sensitivity and specificity. AOAC Method 2002.01; AACC Method 22-02.01; ICC Standard No. 303; RACI Standard Method; CCFRA Flour Testing Working Group Method 0018
β -Glucanase	K-MBG4	β -Glucanase in feed	Novel assay employing a defined oligosaccharide substrate. High sensitivity, specificity and stability. Rapid reaction, ideal for manual and auto-analyser applications
	K-MBGL	Cellulase and β -glucanase levels in feeds	Only kit available. Stable reagents. RACI Standard Method
	T-BGZ	β -Glucanase in feed	Rapid reaction. Sensitive. Stable reagent
endo- β -Xylanase	K-XylX6	β -Xylanase in feed	Rapid, colourimetric, assay with excellent sensitivity and reproducibility. Suitable for use with automated analysis systems.
	T-XAX	β -Xylanase in feed	Sensitive. Easy to use. Stable reagent
Protease	S-AZCAS	endo-Protease added to feed	Easy to use. Stable reagent
Non-Digestible Carbohydrates			
Fructan	K-FRUC	Fructo-oligosaccharides in grasses and grains	Only kit available. Stable reagents; AOAC Method 999.03; AACC Method 32-32.01
Galactomannan	K-GALM	Reserve carbohydrate in many legume seeds	Only kit available, stable reagents
β -Glucan (Mixed linkage)	K-BGLU	Major cell-wall polysaccharide of barley and oats	Rapid reaction, stable reagents, only enzymatic kit available. AOAC Method 995.16; AACC Method 32-23.01; EBC Methods 3.10.1, 4.16.1 & 8.13.1; ICC Standard No.166; RACI Standard Method
Raffinose / D-Galactose	K-RAFGA	Found in high levels in legume seeds. Causes discomfort and flatulence in pigs	Rapid reaction, stable reagents
Resistant Starch	K-RSTAR	Starch that is not digested in the small intestine of monogastric animals	Only kit available. Stable reagents. AOAC Method 2002.02; AACC Method 32-40.01
Total Dietary Fiber	K-TDFR K-INTDF	Carbohydrate not digested in small intestine	1. K-TDFR: AOAC Methods 985.29, 991.42, 991.43 & 993.19; AACC Methods 32-05.01, 32-06.01, 32-07.01 & 32-21.01. 2. K-INTDF is consistent with the CODEX Alimentarius definition of dietary fiber. AOAC Methods 2009.01 & 2011.25; AACC Methods 32-45.01 & 32-50.11
Digestible Carbohydrates			
Available Carbohydrates / Dietary Fiber	K-ACHDF	Rapidly and slowly available sugars for digestion or fermentation	Novel procedure, stable reagents
D-Fructose / D-Glucose	K-FRUGL K-FRGLMQ K-FRGLQR	Major digestible carbohydrates in feeds	Rapid reaction times, choice of simple formats available, ideal for manual and auto-analyser applications, stable reagents
Total Starch	K-TSTA K-TSHK	Starch content of grain and feed	Rapid assay formats with options of measuring D-glucose with GOPOD reagent or with hexokinase / G-6-PDH. Stable reagents. AOAC Method 996.11; AACC Method 76-13.01; ICC Standard No. 168; RACI Standard Method

Bray Business Park, Bray,
Co. Wicklow, A98 YV29, Ireland.

T + 353 1 286 1220

55 E. Monroe Street, Suite 3800,
Chicago, Illinois, 60603, USA.

T + 1 312 212 4361

E cs@megazyme.com
ISO 9001:2008 Registered
www.megazyme.com