



Beta-xylosidase Activity Colorimetric Microplate Assay Kit User Manual

Catalog # CAK1092

(Version 1.4D)

Detection and Quantification of Beta-xylosidase (xynB) Activity in
Tissue extracts, Cell lysate and Other biological fluids Samples.

For research use only. Not for diagnostic or therapeutic procedures.

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I. INTRODUCTION

Beta-xylosidase (EC 3.2.1.37) is an enzyme with system name 4-beta-D-xylan xylohydrolase. This enzyme catalyses the following chemical reaction Hydrolysis of (1->4)-beta-D-xylans, to remove successive D-xylose residues from the non-reducing termini. This enzyme also hydrolyses xylobiose.

Beta-xylosidase Activity Colorimetric Microplate Assay Kit provides a simple and direct procedure for measuring Beta-xylosidase activity in a variety of samples. In this assay, the enzyme catalysed reaction products p-nitrophenol can be measured at a colorimetric readout at 405 nm.

II. KIT COMPONENTS

Component	Volume	Storage
96-Well Microplate	1 plate	
Assay Buffer	30 ml x 4	4 °C
Substrate	Powder x 1	4 °C, keep in dark
Substrate Diluent	4 ml x 1	4 °C
Stop Solution	15 ml x 1	4 °C
Standard (1 mmol/L)	1 ml x 1	4 °C, keep in dark
Positive Control	Powder x 1	-20 °C
Plate Adhesive Strips	3 Strips	
Technical Manual	1 Manual	

Note:

Substrate: add 4 ml Substrate Diluent to dissolve before use, store at -20 °C for 1 month.

Positive Control: add 0.1 ml Assay Buffer before use, mix, store at -80 °C for 1 month.

III. MATERIALS REQUIRED BUT NOT PROVIDED

1. Microplate reader to read absorbance at 405 nm
2. Distilled water
3. Pipettor, multi-channel pipettor
4. Pipette tips
5. Mortar
6. Centrifuge
7. Timer
8. Ice

IV. SAMPLE PREPARATION

1. For cell and bacteria samples

Collect cell or bacteria into centrifuge tube, discard the supernatant after centrifugation, add 1 ml Assay buffer for 5×10^6 cell or bacteria, sonicate (with power 20%, sonicate 3s, interval 10s, repeat 30 times); centrifuged at 12,000g 4 °C for 20 minutes, take the supernatant into a new centrifuge tube and keep it on ice for detection.

2. For tissue samples

Weigh out 0.1 g tissue, homogenize with 1 ml Assay buffer on ice, centrifuged at 12,000g 4 °C for 20 minutes, take the supernatant into a new centrifuge tube and keep it on ice for detection.

V. ASSAY PROCEDURE

Add following reagents into the microplate:

Reagent	Sample	Control	Standard	Blank	Positive Control
Sample	10 μ l	--	--	--	--
Distilled water	--	10 μ l	--	50 μ l	--
Positive Control	--	--	--	--	10 μ l
Substrate	40 μ l	40 μ l	--	--	40 μ l
Mix, put it in the oven, 37 °C for 30 minutes.					
Standard	--	--	50 μ l	--	--
Stop Solution	150 μ l	150 μ l	150 μ l	150 μ l	150 μ l
Mix, wait for 5 minutes, record absorbance measured at 405 nm.					

Note:

- 1) Perform 2-fold serial dilutions of the top standards to make the standard curve.
- 2) For unknown samples, we recommend doing a pilot experiment & testing several doses to ensure the readings are within the standard curve range. If the enzyme activity is lower, please add more sample into the reaction system; or increase the reaction time; if the enzyme activity is higher, please dilute the sample, or decrease the reaction time.
- 3) Reagents must be added step by step, can not be mixed and added together.

VI. CALCULATION

Unit Definition: One unit of Beta-xylosidase activity is defined as the enzyme generates 1 μmol of p-nitrophenol per minute.

1. According to the protein concentration of sample

$$\begin{aligned} \text{xynB (U/mg)} &= (C_{\text{Standard}} \times V_{\text{Standard}}) \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / \\ &\quad (C_{\text{Protein}} \times V_{\text{Sample}}) / T \\ &= 0.167 \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / C_{\text{Protein}} \end{aligned}$$

2. According to the weight of sample

$$\begin{aligned} \text{xynB (U/g)} &= (C_{\text{Standard}} \times V_{\text{Standard}}) \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / (V_{\text{Sample}} \\ &\quad \times W / V_{\text{Assay}}) / T \\ &= 0.167 \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / W \end{aligned}$$

3. According to the quantity of cells or bacteria

$$\begin{aligned} \text{xynB (U/10}^4\text{)} &= (C_{\text{Standard}} \times V_{\text{Standard}}) \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / \\ &\quad (V_{\text{Sample}} \times N / V_{\text{Assay}}) / T \\ &= 0.167 \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / N \end{aligned}$$

C_{Standard} : the concentration of Standard, 1 mmol/L = 1 $\mu\text{mol/ml}$;

C_{Protein} : the protein concentration, mg/ml;

W: the weight of sample, g;

N: the quantity of cell or bacteria, $N \times 10^4$;

V_{Standard} : the total volume of the enzymatic reaction, 0.05 ml;

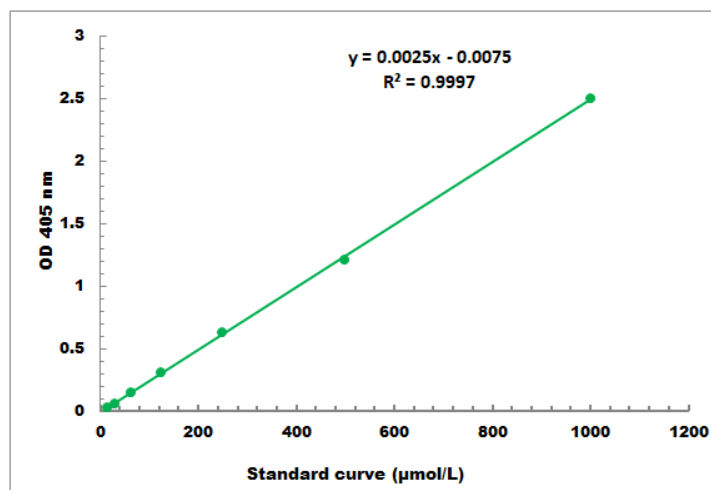
V_{Sample} : the volume of sample, 0.01 ml;

V_{Assay} : the volume of Assay buffer, 1 ml;

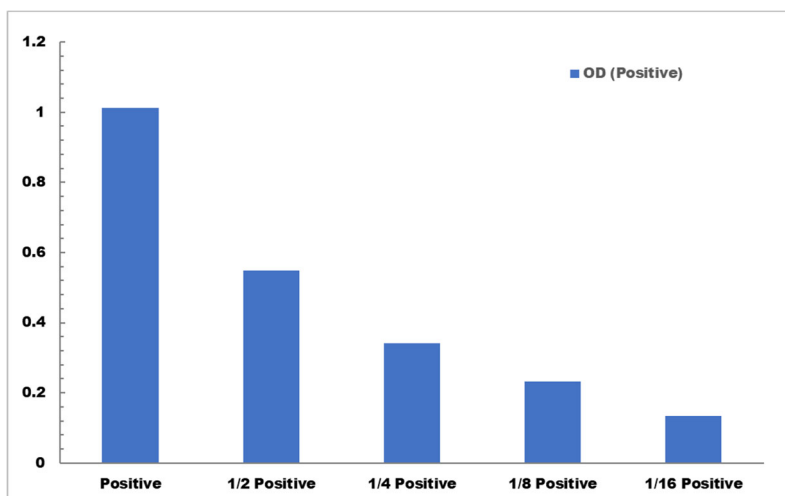
T: the reaction time, 30 minutes.

VII. TYPICAL DATA

The standard curve is for demonstration only. A standard curve must be run with each assay.



Detection Range: 10 µmol/L - 1000 µmol/L



Positive Control reaction in 96-well plate assay with decreasing the concentration

VIII. TECHNICAL SUPPORT

For troubleshooting, information or assistance, please go online to www.cohesionbio.com or contact us at techsupport@cohesionbio.com

IX. NOTES