

Beta-xylosidase Microplate Assay Kit

Basic information:

Catalog No.: UAK1092

Size: 100 Assays

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

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.

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	4 ml x 1	4 °C, keep in dark
Stop Solution	15 ml x 1	4 °C
Standard (1 mmol/L)	1 ml x 1	4 °C
Plate Adhesive Strips	3 Strips	
Technical Manual	1 Manual	

III. MATERIALS REQUIRED BUT NOT PROVIDED

1. Microplate reader to read absorbance at 405 nm
2. Distilled water
3. 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%, sonication 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
Sample	10 μ l	--	--	--
Distilled water	--	10 μ l	--	--
Substrate	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	200 μ l
Mix, wait for 5 minutes, record absorbance measured at 405 nm.				

VI. CALCULATION

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

1. According to the protein concentration of sample

$$\begin{aligned} \text{xynB (U/mg)} &= (C_{\text{Standard}} \times V_{\text{Standard}}) \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / \\ &\quad (C_{\text{Protein}} \times V_{\text{Sample}}) / T \\ &= 10 \times (OD_{\text{Sample}} - OD_{\text{Control}}) / (OD_{\text{Standard}} - OD_{\text{Blank}}) / C_{\text{Protein}} \end{aligned}$$

2. According to the weight of sample

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

3. According to the quantity of cells or bacteria

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

C_{Standard} : the concentration of Standard, 1 mmol/L = 1 μ 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;

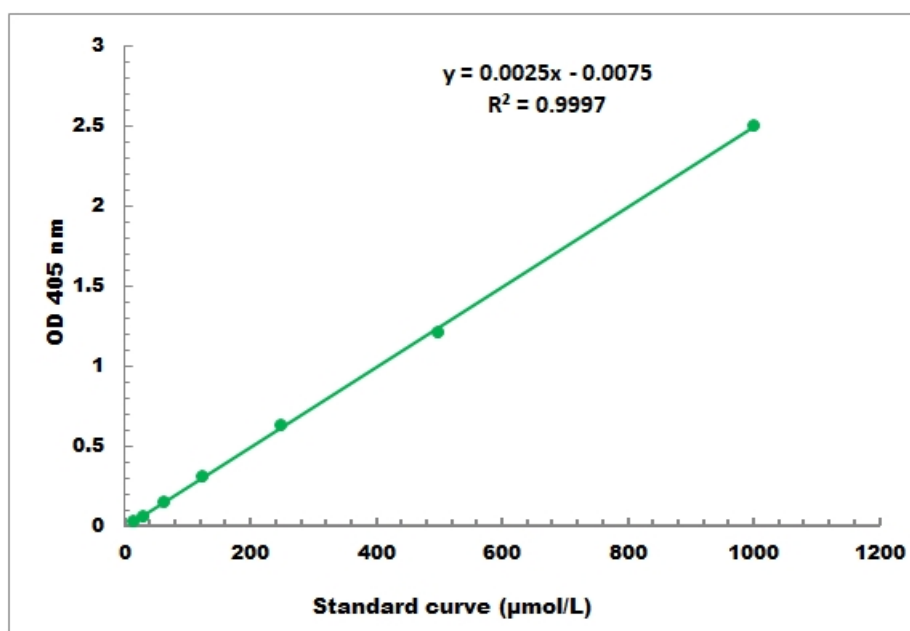
V_{Sample} : the volume of sample, 0.01 ml;

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

T: the reaction time, 30 minutes = 0.5 hour.

VII. TYPICAL DATA

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



Detection Range: 10 $\mu\text{mol/L}$ - 1000 $\mu\text{mol/L}$