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## Product Information

### 4-Methylumbelliferyl $\beta$ -D-mannopyranoside

Product Number **M 0905**  
Storage Temperature  $-0^{\circ}\text{C}$

#### Product Description

Molecular formula:  $\text{C}_{16}\text{H}_{18}\text{O}_8$   
Molecular weight: 338.3  
CAS Number: 67909-30-2  
Melting point:  $241\text{-}243^{\circ}\text{C}$ <sup>1</sup>  
Specific Rotation:  $-105^{\circ}$  (0.3% in pyridine)<sup>1</sup>  
Extinction Coefficient:  $E^{\text{mM}} = 14.2$  (317 nm, methanol)<sup>1</sup>

4-Methylumbelliferyl- $\beta$ -D-mannopyranoside is a sensitive, fluorogenic substrate for  $\beta$ -mannosidase. It has been used in the characterization of placental and kidney  $\beta$ -mannosidase.<sup>2,3</sup> When it has been used to monitor bacterial growth as a function of the endoglycosidase activity,<sup>4,5</sup> assays were performed at pH 7.0. The released 4-methylumbelliferone was quantified by comparison with standard using excitation and emission wavelengths of 355 nm and 460 nm respectively.<sup>4,5</sup> 4-Methylumbelliferyl- $\beta$ -D-mannopyranoside has been used in screening a genomic library of *T. fusca* for mannosidase-positive clones,<sup>6</sup> and to monitor mannosidase production in different strains of *Streptococci*.<sup>4</sup>

#### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

#### Preparation Instructions

This product is soluble in pyridine (10 mg/ml), yielding a clear solution. It will also dissolve in either 0.1 M sodium acetate, pH 5, or 0.1 M glycine, pH 10, (0.5 mg/ml, sonication may be needed).

#### References

1. Courtin-Duchateau, M. and Veyrieres, A., Synthesis of 4-Methylumbelliferyl 1,2-cis-Glycosides. *Carbohydrate Research*, **65**, 23-33 (1978).
2. Iwasaki, Y. et al., Purification and characterization of beta-mannosidase from human placenta. *J. Biochem. (Tokyo)*, **106(2)**, 331-335 (1989).
3. Frei, J. I., et al., Partial purification of goat kidney beta-mannosidase. *Biochem. J.*, **249(3)**, 871-875 (1988).
4. Homer, K. A., et al., Mannosidase production by viridans group streptococci. *J. Clin. Microbiol.*, **39(3)**, 995-1001 (2001).
5. Roberts, G., et al., Production of an endo- $\beta$ -N-acetylglucosaminidase activity mediates growth of *Enterococcus faecalis* on a high-mannose-type glycoprotein. *J. Bacteriol.*, **182(4)**, 882-890 (2000).
6. Beki, E., et al., Cloning and heterologous expression of a  $\beta$ -D-mannosidase (EC 3.2.1.25)-encoding gene from *Thermobifidia fusca* TM51. *Appl. Environ. Microbiol.*, **69(4)**, 1944-1952 (2003).

MES/NSB 12/03

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