

## Product Information

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

Product Number **M 7008**

Storage Temperature -0 °C

#### Product Description

Molecular Formula: C<sub>15</sub>H<sub>16</sub>O<sub>7</sub>

Molecular Weight: 308.3

CAS Number: 6734-33-4

Melting Point: 213-214 °C<sup>1</sup>

Specific Rotation: -42° (0.1% (w/v) in water)<sup>1</sup>

Synonyms: 4-Methylumbelliferyl- $\beta$ -D-xyloside; Xyl-MU; MU-Xyl

4-Methylumbelliferyl- $\beta$ -D-xylopyranoside is a sensitive, fluorogenic substrate for  $\beta$ -xylosidase. It is cleaved by exo- $\beta$ -xylosidase from pig kidney, but not by endo- $\beta$ -xylosidase.<sup>2,3</sup> The product of the enzymatic reaction (4-methylumbelliferone) is measured at pH 10.<sup>4</sup> Released 4-methylumbelliferone is measured using an excitation wavelength of 355 nm with emission at 460 nm.<sup>4</sup>

Incubation of chondrocytes with MU-Xyl resulted in the secretion of fluorogenic glycosaminoglycan (GAG) chains into the medium (MU-GAG).<sup>5</sup> These GAGs have 4-methylumbelliferone at their reducing termini. The MU-GAG is useful for specific determination of endo- $\beta$ -xylosidase activity. The MU-GAG has been used in the characterization of endo- $\beta$ -xylosidase from *Patinopecten*.<sup>3</sup>

Addition of Xyl-MU to cultured human skin fibroblasts or Chinese hamster ovary cells induces SA $\alpha$ (2 $\rightarrow$ 3)Gal(1 $\rightarrow$ 4)Xyl $\beta$ 1-MU, which is initiated by  $\beta$ -xyloside as a primer, rather than the expected SA $\alpha$ (2 $\rightarrow$ 3)Gal $\beta$ (1 $\rightarrow$ 4)Glc $\beta$ 1-MU, which is initiated by  $\beta$ -glucose as a primer,<sup>7,8</sup> suggesting that the galactosyltransferases involved in biosynthesis cannot distinguish between xylose and glucose. Cellulase, which is a glucosidase, seems also to show endo-type  $\beta$ -xylosidase activity.<sup>9</sup>

MU-Xyl has been shown to inhibit proteoglycan synthesis in rat aortic smooth muscle cells and in CHO cells.<sup>8,10</sup>

#### Precautions and Disclaimer

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

#### Preparation Instructions

This product is soluble in pyridine (50 mg/ml) and water (1 mg/ml), yielding a clear, colorless to faint yellow solution. It has also been used in Dulbecco's Modified Eagle Medium (DMEM, 1 mM, 0.3 mg/ml).<sup>10</sup>

#### References

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9. Takagaki, K., et al., Cleavage of the xylosyl serine linkage between a core peptide and a glycosaminoglycan chain by cellulases. *J. Biol. Chem.*, **277(21)**, 18397-18403 (2002).
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