



Product Information

4-Methylumbelliferyl beta-D-cellobioside

Product Number **M 6018**
Storage Temperature 2-8 °C

Product Description

Molecular formula: $C_{22}H_{28}O_{13}$
Molecular weight: 500.5
CAS Number: 72626-61-0
Melting point: 230 °C (with decomposition)¹
Specific Rotation: -39.6° (0.24% in pyridine)
Synonym: MUC

4-Methylumbelliferyl β -D-cellobioside has been used as a substrate for cellulase assays. The cleavage product, 4-methylumbelliferone can be quantified spectrophotometrically² using the absorption maximum of 350 nm or fluorometrically at pH 10 using excitation and emission wavelengths of 365 nm and 455 nm, respectively.

This substrate has been used for activity staining of cellulases in polyacrylamide gels.³ For activity staining of cellobiohydrolase activity, incubations were carried out in the presence of 1 mM MUC and positive bands were detected by fluorescence under UV illumination at 340 nm. The *in situ* zymogram technique is convenient for the preliminary characterization of recombinant clones carrying *C. thermocellum* genes involved in β -glucan degradation.³

This substrate has been used in the screening of CelD-fusion constructs in a 96 well plate format by incubating the fusion protein in 0.1 mM of MUC, then adding 1 M Na_2CO_3 .⁴ The fluorescence of the 4-methylumbelliferone released was measured at excitation and emission wavelengths of 365 nm and 455 nm, respectively. An alternative method for screening cellulase activity was to include 0.1 mM MUC in LB/ampicillin broth during culture growth.⁴

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in water (20 mg/ml), yielding a clear, colorless solution.

References

1. Constantzas, N., and Kocourek, J., Glykoside des 4-Methylumbelliferons. Collection Czechoslov. Chem., **24**, 1099-1104 (1959).
2. Chernoglazov, V. M., et al., Continuous photometric determination of endo-1,4 β -D-glucanase (cellulase) activity using 4-methylumbelliferyl- β -D-cellobioside as a substrate. Anal. Biochem., **179(1)**, 186-189 (1989).
3. Schwarz, W. H., et al, Activity staining of cellulases in polyacrylamide gels containing mixed linkage β -glucans. Anal. Biochem., **164(1)**, 72-77 (1987).
4. Xue, G. P., Characterisation of the DNA-binding profile of barley HvCBF1 using an enzymatic method for rapid, quantitative and high-throughput analysis of the DNA-binding activity. Nucleic Acids Research, **30(15)**, e77 (2002).

MES/RXR 12/03

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