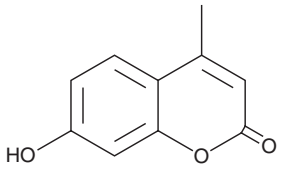
PRODUCT INFORMATION

4-Methylumbelliferone

Item No. 29603

CAS Registry No.:	90-33-5
Formal Name:	7-hydroxy-4-methyl-2H-1-benzopyran-2-one
Synonyms:	4-MU, Hymecromone, 4-Methyl-7-hydroxycoumarin, 7-Hydroxy-4-methylcoumarin
MF:	$C_{10}H_8O_3$
FW:	176.2
Purity:	≥98%
Ex./Em. Max:	320 and 360 nm at low and high pH, respectively/ 445 and 455 nm at low and high pH, respectively
UV/Vis.:	λ_{max}: 218, 325 nm
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

4-Methylumbelliferone is supplied as a solid. A stock solution may be made by dissolving the 4-methylumbelliferone in the solvent of choice, which should be purged with an inert gas. 4-Methylumbelliferone is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of 4-methylumbelliferone in ethanol is approximately 0.25 mg/ml and approximately 30 mg/ml in DMSO and DMF.

4-Methylumbelliferone is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, 4-methylumbelliferone should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. 4-Methylumbelliferone has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

4-Methylumbelliferone (4-MU) is a synthetic coumarin with diverse biological activities.[1-3] It inhibits hyaluronic acid synthesis in PC3-ML and DU145 cells (IC_{50}s = ~0.4 mM for both).[1] 4-MU inhibits the growth of PC3-ML, DU145, C4-2B, LNCaP, and LAPC-4 prostate cancer cells (IC_{50}s = 0.2-0.4 mM) and invasion and chemotactic motility of PC3-ML and DU145 cells *in vitro*. It reduces tumor growth and microvessel density in a PC3-ML mouse xenograft model when administered at doses of 225 and 450 mg/kg twice per day. 4-MU is active against *H. pylori* and *V. cholerae in vitro* (MICs = 59 and 100-200 µg/ml, respectively).[2] Derivatives and conjugates of 4-MU have been used as fluorogenic substrates to measure enzyme activity.[4-6] Upon enzymatic cleavage, 4-MU is released and its fluorescence can be used to quantify enzyme activity. 4-MU fluorescence is pH-dependent with excitation maxima of 320 and 360 nm at low (1.97-6.72) and high pH (7.12-10.3), respectively, and an emission maximum ranging from 445 to 455 nm, increasing as pH decreases.[3]

References

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