

# PRODUCT INFORMATION



## 4-Methylumbelliferyl Palmitate

Item No. 16089

**CAS Registry No.:** 17695-48-6  
**Formal Name:** hexadecanoic acid, 4-methyl-2-oxo-2H-1-benzopyran-7-yl ester  
**Synonyms:** 4-MUP, 4-MU Palmitate, Palmitoyl 4-Methylumbelliferone

**MF:** C<sub>26</sub>H<sub>38</sub>O<sub>4</sub>

**FW:** 414.6

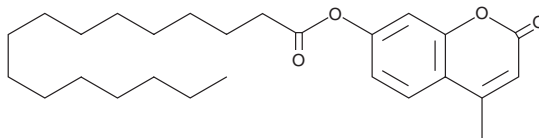
**Purity:** ≥98%

**UV/Vis.:** λ<sub>max</sub>: 274, 310 nm

**Supplied as:** A crystalline 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-Methylumbelliferyl palmitate (4-MUP) is supplied as a crystalline solid. A stock solution may be made by dissolving the 4-MUP in the solvent of choice, which should be purged with an inert gas. 4-MUP is soluble in organic solvents such as chloroform, DMSO, and dimethyl formamide. The solubility of 4-MUP in these solvents is approximately 20, 0.1, and 10 mg/ml, respectively.

### Description

Cholesterol ester storage disease and Wolman disease are recessive autosomal disorders caused by a deficiency in lysosomal acid lipase (LAL), also known as cholesteryl ester hydrolase.<sup>1,2</sup> 4-MUP is a fluorogenic substrate for lysosomal acid lipase (LAL).<sup>3</sup> 4-MUP is cleaved by LAL to release the fluorescent moiety 4-MU. 4-MU fluorescence is pH-dependent with excitation maxima of 320 and 360 nm at low (1.97-6.72) and high (7.12-10.3) pH, respectively, and an emission maximum ranging from 445 to 455 nm, increasing as pH decreases.<sup>4</sup> 4-MUP may also be cleaved by other acid lipases.<sup>5,6</sup> Recent advances allow the assessment of LAL activity in very small blood volumes using 4-MUP.<sup>1,2</sup>

### References

1. Dairaku, T., Iwamoto, T., Nishimura, M., *et al.* A practical fluorometric assay method to measure lysosomal acid lipase activity in dried blood spots for the screening of cholesteryl ester storage disease and Wolman disease. *Mol. Genet. Metab.* **111(2)**, 193-196 (2014).
2. Hamilton, J., Jones, I., Srivastava, R., *et al.* A new method for the measurement of lysosomal acid lipase in dried blood spots using the inhibitor Lalstat 2. *Clin. Chim. Acta* **413(15-16)**, 1207-1210 (2012).
3. Kelly, S. and Bakhru-Kishore, R. Fluorimetric assay of acid lipase in human leukocytes. *Clin. Chim. Acta* **97(2-3)**, 239-242 (1979).
4. Zhi, H., Wang, J., Wang, S., *et al.* Fluorescent properties of hymecromone and fluorimetric analysis of hymecromone in compound dantong capsule. *J. Spectrosc.* 147128 (2013).
5. Warner, T.G., Dambach, L.M., Shim, J.H., *et al.* Separation and characterization of the acid lipase and neutral esterases from human liver. *Am. J. Hum. Genet.* **32(6)**, 869-879 (1980).
6. Baillargeon, M.W. and McCarthy, S.G. *Geotrichum candidum* NRRL Y-553 lipase: Purification, characterization and fatty acid specificity. *Lipids* **26(10)**, 831-836 (1991).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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