

# PRODUCT INFORMATION



## CA-074 methyl ester

Item No. 18469

CAS Registry No.: 147859-80-1

Formal Name: N-[[[(2S,3S)-3-[(propylamino) carbonyl]-2-oxiranyl]carbonyl]-L-isoleucyl-L-proline, methyl ester

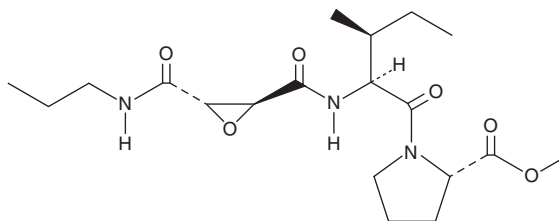
MF:  $C_{19}H_{31}N_3O_6$

FW: 397.5

Purity:  $\geq 98\%$

Stability:  $\geq 2$  years at  $-20^\circ\text{C}$

Supplied as: A crystalline solid



### Laboratory Procedures

For long term storage, we suggest that CA-074 methyl ester be stored as supplied at  $-20^\circ\text{C}$ . It should be stable for at least two years.

CA-074 methyl ester is supplied as a crystalline solid. A stock solution may be made by dissolving the CA-074 methyl ester in the solvent of choice. CA-074 methyl ester is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of CA-074 methyl ester in ethanol is approximately 2 mg/ml and approximately 16 mg/ml in DMSO and DMF.

CA-074 methyl ester is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, CA-074 methyl ester should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. CA-074 methyl ester 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

CA-074 methyl ester is a cell-permeable inhibitor of cathepsin B and L *in vivo* and in whole cells.<sup>1,2</sup> The methyl ester is hydrolyzed by intracellular esterases releasing the active inhibitor, CA-074. This compound has primarily been used to study the role of cathepsin B in neurodegeneration, cancer cell metastasis, necrosis, and rheumatoid arthritis.<sup>3-6</sup>

### References

1. Montaser, M., Lalmanach, G., and Mach, L. CA-074, but not its methyl ester CA-074ME, is a selective inhibitor of cathepsin B within living cells. *Biol. Chem.* **383**, 1305-1308 (2002).
2. Steverding, D. The cathepsin B-selective inhibitors CA-074 and CA-074Me inactivate cathepsin L under reducing conditions. *Open Enzyme Inhibition Journal* **4**, 11-16 (2011).
3. Hook, V.Y., Kindy, M., and Hook, G. Inhibitors of cathepsin B improve memory and reduce  $\beta$ -amyloid in transgenic Alzheimer disease mice expressing the wild-type, but not the Swedish mutant,  $\beta$ -secretase site of the amyloid precursor protein. *J. Biol. Chem.* **283**(12), 7745-7753 (2008).
4. Szpaderska, A.M. and Frankfater, A. An intracellular form of cathepsin B contributes to invasiveness in cancer. *Cancer Res.* **61**, 3493-3500 (2001).
5. Hentze, H., Lin, X.Y., Choi, M.S.K., *et al.* Critical role for cathepsin B in mediating caspase-1-dependent interleukin-18 maturation and caspase-1-independent necrosis triggered by the microbial toxin nigericin. *Cell Death Differ.* **10**, 956-968 (2003).
6. Tong, B., Wan, B., Wei, Z., *et al.* Role of cathepsin B in regulating migration and invasion of fibroblast-like synoviocytes into inflamed tissue from patients with rheumatoid arthritis. *Clin. Exp. Immunol.* **177**, 586-597 (2014).

#### 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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#### CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897

[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM

WWW.CAYMANCHEM.COM