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ProductInformation

MeOSuc-Phe-Homo-Phe Fluoromethyl Ketone

Product Number **M 5314**
Storage Temperature –20 °C

Product Description
Molecular formula: $C_{25}H_{30}O_4N_3F$
Molecular weight: 453.5

MeOSuc-Phe-HomoPhe Fluoromethyl Ketone is the methylated cell permeable derivative of the cathepsin inhibitor Suc-Phe-Homo-Phe Fluoromethyl Ketone (Mu-Phe-HPh-FMK). Mu-Phe-HPh-FMK inhibits cathepsins B and L.

Among the intracellular proteinases, thiol proteinases such as cathepsin B and cathepsin L, active at slightly acidic pH, play a role in lysosomal protein catabolism. Both have identical substrate specificity, but 4 M urea at pH 5.0 will inactivate cathepsin B, while cathepsin L retains its activity under these conditions.[3]

Cathepsin B is a lysosomal cysteine protease involved in cellular protein turnover.[4] Cathepsin B has a high abundance and exhibits both endopeptidase and peptidyldipeptidase activity.[3] This enzyme has been implicated in several pathological conditions including arthritis and tumor metastasis.

Cathepsin L is the most powerful of the lysosomal proteinases and has a higher specific activity than cathepsin B in the degradation of physiological protein substrates. Cathepsin L, but not cathepsin B, can also generate kinins from high and low molecular weight kininogens in vitro.[4]

FMK is a trapping group responsible for irreversible inhibition, but is non-cytotoxic. Inhibition occurs when the the FMK group covalently bonds to the –SH of an adjacent cysteine residue on the target protein.

Preparation Instructions
Prepare stock 20 mM solutions in dry DMSO (>99.9%). Suggested working concentration is 40 µM

Storage/Stability
Store dessicated at –20 °C.

Stock solutions stored in frozen aliquots at –20 °C are stable for 6-8 months.
Allow containers to equilibrate to room temperature before opening.

References
1. Van Noorden, J. F., et al. Cysteine proteinase activity in arthritic rat knee joints and the effects of a selective systemic inhibitor, Z-Phe-AlaCH2F. J. Rheumatol. **15,** 1525-1535 (1988).
2. Harth, G. et al. Peptide-fluoromethyl ketones arrest intracellular replication and intercellular transmission of Trypanosoma cruzi. Mol. Biochem. Parasitol. **58,** 17-24 (1993).
3. Kamboj, R. C., et al. A selective colorimetric assay for cathepsin L using Z-Phe-Arg-4-methoxy-beta-naphthylamide. Biochimie, **75,** 873-878 (1993).
4. Kirschke H, Barrett AJ. 1987. Lysosomal cysteine proteases. In: Glaumann H, Ballard FJ, eds. Lysosomes: Their role in protein breakdown. London: Academic Press. pp 193-238.
5. Aronson, N. N., Jr., and Barrett, A. J., The specificity of cathepsin B. Hydrolysis of glucagon at the C-terminus by a peptidyldipeptidase mechanism. Biochem. J., **171,** 759-765 (1978).
6. Desmazes, C., et al., Cathepsin L, but not cathepsin B, is a potential kininogenase. Biol. Chem., **382,** 811-815 (2001)

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