

Product Information

Chymostatin

Microbial

C7268

Product Description

CAS Number: 9076-44-2

Synonym: *N*-(*N*α-Carbonyl-Cpd-X-Phe-al)-Phe

Synonym Notes:

- Identities of amino acid X:
 - Chymostatin A: X = L-leucine (Leu)
 - Chymostatin B: X = L-valine (Val)
 - Chymostatin C: X = L-isoleucine (Ile)
- Cpd = capreomycinidine
- Capreomycinidine = [S,S]-α-(2-Iminohexahydro-4-pyrimidyl)glycine

Molecular Weights of Chymostatin components:

- Chymostatin A: 607.7
- Chymostatin B: 593.7
- Chymostatin C: 607.7

Molecular Formulas of Chymostatin components:

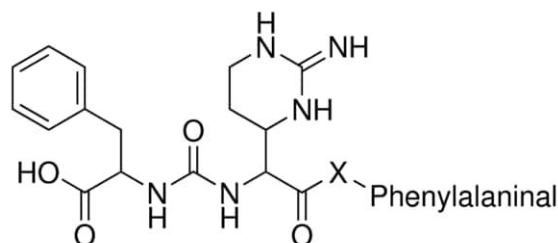
- Chymostatin A: C₃₁H₄₁O₆N₇
- Chymostatin B: C₃₀H₃₉O₆N₇
- Chymostatin C: C₃₁H₄₁O₆N₇

Chymostatin is an enzyme inhibitor that occurs naturally in several actinomycetes species,¹ such as:

- *Streptomyces hygroscopicus* (Strain Number MC521-C8)
- *Streptomyces lavendulae* (Strain Number MC524-C1)

Chymostatin is a mixture of hydrophobic tetrapeptide aldehydes, with 3 principal components,² labeled A, B and C,³ which differ each by one particular amino acid. An approximate chymostatin composition has been reported as follows:⁴

- ~ 80% chymostatin A
- ~ 15% chymostatin B
- ~ 5% chymostatin C



Chymostatin A X = Leu

Chymostatin B X = Val

Chymostatin C X = Ile

Chymostatin is a strong inhibitor of many proteinases, including chymotrypsin, chymotrypsin-like serine proteinases, chymases and lysosomal cysteine proteinases such as cathepsins B, H and L.⁵⁻⁷ It weakly inhibits human leucocyte elastase.⁸ Chymostatin is effective at a final concentration of 6-60 µg/mL (10-100 µM), although the working solution is not stable, as the terminal aldehyde is subject to oxidation.

Several dissertations⁹⁻¹² have cited use of product C7268 in their protocols.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the lyophilized product at -20 °C.

Solubility

Chymostatin is tested for solubility in glacial acetic acid at 10 mg/mL. One publication cites preparation of chymostatin stock solutions in DMSO, at 5 mg in 250 μ L (equivalent to 20 mg/mL).¹³ Use of solvents purged of oxygen may mitigate risk of oxidation of the aldehyde group(s) of chymostatin.

Stock solutions of chymostatin can be made in 0.1 M HCl. One publication has reported preparation of 10 mM stock solutions in DMSO, with storage for up to one month at $-20\text{ }^{\circ}\text{C}$.¹⁴ Dilute solutions (10-100 μ M) are stable for several hours.¹

References

1. Umezawa, H. *et al.*, *J. Antibiotics*, **23(8)**, 425-427 (1970).
2. Tatsuta, K. *et al.*, *J. Antibiotics*, **26(11)**, 625-646 (1973).
3. Dawson, R.M.C. *et al.* (eds.), *Data for Biochemical Research*, 3rd edition. Clarendon Press, pp. 328-329 (1987).
4. Bullock, T.L. *et al.*, *J. Mol. Biol.*, **255(5)**, 714-725 (1996).
5. Umezawa, H., *Methods Enzymol.*, **45**, 678-695 (1976).
6. Beynon, R., and Bond, J.S., *Proteolytic Enzymes: A Practical Approach* (1st ed.). Oxford University Press (Oxford, UK), pp. 117, 207, 243 (1989).
7. Levy, M.R. and Chou, S.C., *Biochim. Biophys. Acta - Enzymology*, **334(2)**, 423-430 (1974).
8. Feinstein, G. *et al.*, *Biochim. Biophys. Acta - Enzymology*, **429(3)**, 925-932 (1976).
9. Harbourt, David Edward, "An Investigation into The Role of Glucuronidation on the Disposition and Toxicity of Mycophenolic Acid Using Targeted Quantitative Proteomics". University of North Carolina at Chapel Hill, Ph.D. dissertation, p. 125 (2009).
10. Wuebben, Erin Lynn, "Altered Levels of SOX2, and its Associated Protein Musashi2, Disrupt Critical Cell Functions in Cancer and Embryonic Stem Cells". University of Nebraska Medical Center, Ph.D. dissertation, p. 47 (2016).

11. Nordberg, Joshua John, "The Importance of the Centrosomal Localization Sequence of Cyclin E for Promoting Centrosome Duplication". University of Massachusetts Graduate School of Biomedical Sciences, Ph.D. dissertation, p. 119 (2011).
12. Blehm, Benjamin Henry, "Force Studies of Intracellular Transport". University of Illinois at Urbana-Champaign, Ph.D. dissertation, p. 44 (2012).
13. Succar, J. *et al.*, *Adv. Wound Care (New Rochelle)*, **8(10)**, 469-475 (2019).
14. Taban, C.H., and Cathieni, M.M., "Microwave-Aided Binding of Colloidal Gold-Protein-Substance P", from *Immunogold-Silver Staining Principles, Methods, and Applications* (M.A. Hayat, ed.). CRC Press, Chapter 11, p. 187 (1995).

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