



Product Information

Lactacystin

Product Number **L 6785**
Storage Temperature -20 °C

Product Description

Molecular Formula: $C_{15}H_{24}N_2O_7S$
Molecular Weight: 376.4
CAS Number: 133343-34-7

Lactacystin is a *Streptomyces* metabolite that was found in the early 1990's to be a cell-permeable and irreversible proteasome inhibitor.¹ It has consequently found common use in studies of the proteasome.^{2,3,4} Lactacystin was historically shown to inhibit cell proliferation and to induce neurite outgrowth in murine neuroblastoma cell lines such as Neuro 2a.^{1,5} The inhibitory mechanism has been proposed to involve covalent binding to the active site N-terminal threonine residue in some of the β -subunits of the proteasome.^{2,6,7} An additional study on the mechanism of action of lactacystin on the proteasome has implicated the formation of an intermediate species, clasto-lactacystin β -lactone.⁸

The use of lactacystin in cell culture has been reported at 1-10 μ M with rat liver epithelial cells.⁹ Lactacystin has been shown to stabilize the α -subunit of the gastric proton pump (H^+,K^+)-ATPase as expressed using a heterologous expression system in HEK 293 cells.¹⁰ Treatment of HepG2 cells with lactacystin was demonstrated to lead to accumulation of the transcription factor Nrf2, as related to the regulation of genes that encode phase II drug-metabolizing enzymes via the antioxidant response element.¹¹

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water (5 mg/ml). It is also soluble in methanol or ethanol (1 mg/ml).

Storage/Stability

Stock solutions of this product may be stored at -20 °C, protected from light.

References

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10. Kimura, T., et al., Quantity and quality control of gastric proton pump in the endoplasmic reticulum by ubiquitin/proteasome system. *Biochemistry*, **42(17)**, 4771-4779 (2003).
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