



Product Information

Acivicin

Product Number **A 2295**
Storage Temperature 2-8 °C

Product Description

Molecular Formula: C₅H₇ClN₂O₃
Molecular Weight: 178.6
CAS Number: 42228-92-2
Melting Point: 209-211 °C
Synonyms: AT125, U-42126¹

Acivicin is an irreversible inhibitor of γ -glutamyl transpeptidase and antagonist of L-glutamine that is used in cancer research.²⁻⁴ It is also an inhibitor of *de novo* biosynthesis of purines and pyrimidines, and has been studied for cytotoxic activity against hepatoma and colon carcinoma cells.⁵ In a study of *E. coli*, the interaction of acivicin with the glutamine amidotransferase HisHF has been probed.⁶

Acivicin has been used to probe nitric oxide (NO)-induced glutathione depletion and NO-induced apoptosis in human T lymphocytes.⁷ Glutathione release in cultured rat astroglial cells in the presence of acivicin (4-50 μ M) has been studied.⁸ Acivicin has been shown to promote apoptosis induced by homocysteine and copper in ECV304 cells.⁹

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in 1 N HCl (50 mg/ml), with heat as needed, yielding a clear to very slightly hazy, colorless to faint yellow solution.

References

1. Dictionary of Organic Compounds, 5th ed., Vol. 1, Chapman and Hall (New York, NY: 1982), p. 396, #A03179.
2. Dass, P. D., and Donahue, M. J., γ -Glutamyl transpeptidase activity in *Ascaris suum*. Mol. Biochem. Parasitol., **20**, 233-236 (1986).
3. Griffith, O. W., and Meister, A., Excretion of cysteine and γ -glutamylcysteine moieties in human and experimental animal γ -glutamyl transpeptidase deficiency. Proc. Natl. Acad. Sci. USA, **77(6)**, 3384-3387 (1980).
4. Ahluwalia, G. S., et al., Metabolism and action of amino acid analog anti-cancer agents. Pharmacol. Ther., **46(2)**, 243-271 (1990).
5. Weber, G., et al., Regulation of *de novo* and salvage pathways in chemotherapy. Adv. Enzyme Regul., **31**, 45-67 (1991).
6. Smulski, D. R., et al., Combined, functional genomic-biochemical approach to intermediary metabolism: interaction of acivicin, a glutamine amidotransferase inhibitor, with *Escherichia coli* K-12. J. Bacteriol., **183(11)**, 3353-3364 (2001).
7. Roozendaal, R., et al., Interaction between nitric oxide and subsets of human T lymphocytes with differences in glutathione metabolism. Immunology, **107(3)**, 334-339 (2002).
8. Dringen, R., et al., The γ -glutamyl transpeptidase inhibitor acivicin preserves glutathione released by astroglial cells in culture. Neurochem Res, **22(6)**, 727-733 (1997).
9. Bessede, G., et al., Efficiency of homocysteine plus copper in inducing apoptosis is inversely proportional to γ -glutamyl transpeptidase activity. FASEB J., **15(11)**, 1927-1940 (2001).

GCY/JRC 12/03

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.