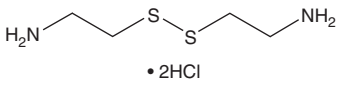
PRODUCT INFORMATION

Cystamine (hydrochloride)

Item No. 14882

CAS Registry No.: 56-17-7
Formal Name: 2,2'-dithiobis-ethanamine, dihydrochloride
MF: $C_4H_{12}N_2S_2 \bullet 2HCl$
FW: 225.2
Purity: ≥95%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Cystamine (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the cystamine (hydrochloride) in the solvent of choice, which should be purged with an inert gas. Cystamine (hydrochloride) is soluble in the organic solvent DMSO at a concentration of approximately 5 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of cystamine (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of cystamine (hydrochloride) in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Tissue transglutaminase (TGM2) post-translationally modifies proteins by catalyzing intermolecular cross-linkages between glutamine and lysine side chains.[1] TGM2 has roles in neurodegenerative disorders, celiac sprue, cancer, and fibrotic diseases.[1,2] Cystamine is an organic disulfide that inhibits TGM2 with an IC_{50} value of approximately 2.5 mM.[3] It is orally available and is neuroprotective in mouse models of Huntington's disease.[4,5] Cystamine also inhibits caspase 3, increases intracellular glutathione, and reduces inflammation in a rat model of inflammatory bowel disease.[6]

References

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2. Caccamo, D., Currņ, M., and Ientile, R. Potential of transglutaminase 2 as a therapeutic target. *Expert Opin. Ther. Targets* **14(9)**, 989-1003 (2010).
3. Smethurst, P.A. and Griffin, M. Measurement of tissue transglutaminase activity in a permeabilized cell system: its regulation by Ca^{2+} and nucleotides. *Biochem. J.* **131(pt3)**, 803-808 (1996).
4. Dedeoglou, A., Kubilus, J.K., Jeitner, T.M., *et al*. Therapeutic effects of cystamine in a murine model of Huntington's disease. *J. Neurosci*. **22(20)**, 8942-8950 (2002).
5. Borrell-Pagčs, M., Canals, K.P., Cordeličrs, F.P., *et al*. Cystamine and cysteamine increase brain levels of BDNF in Huntington disease *via* HSJ1b and transglutaminase. *J. Clin. Invest*. **116(5)**, 1410-1424 (2006).
6. Elli, L., Ciulla, M.M., Busca, G., *et al.* Beneficial effects of treatment with transglutaminase inhibitor cystamine on the severity of inflammation in a rat model of inflammatory bowel disease. *Lab Invest*. **91(3)**, 452-461 (2011).

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