

Product Data Sheet

Product Name: MTSES
Cat. No.: GC44254

Chemical Properties

Cas. No. 184644-83-5

Chemical Name 2-[(methylsulfonyl)thio]-ethanesulfonic acid, monosodium salt

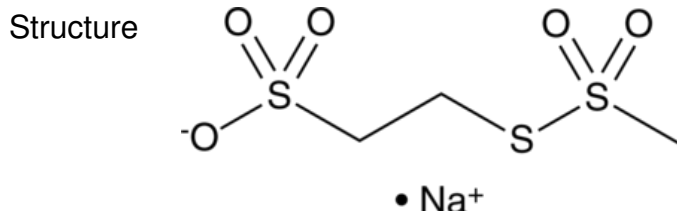
SMILES [O-]S(CCSS(C)(=O)=O)(=O)=O.[Na+]

Formula $C_3H_7O_5S_3 \cdot Na$ M.Wt 242.3

Solubility 20 mg/ml in DMF, 20 mg/ml in DMSO Storage Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.



Background

Methanethiosulfonates (MTS) are sulfhydryl-reactive compounds that form mixed disulfide linkages and are commonly used to study cysteine residues on proteins. Sodium (2-sulfonatoethyl) methanethiosulfonate (MTSES) is a negatively-charged, membrane impermeant MTS. It is highly reactive with ionized thiolates but not with unionized thiols and, therefore, targets sulfhydryl groups accessible from the aqueous medium. MTSES is used to probe the structural and functional properties of native proteins, particularly those associated with membranes, including channels and transporters.[1][2][3] In addition, charged MTS compounds like MTSES are combined with cysteine scanning mutagenesis to study non-cysteine residues.[4][5]

Reference:

Caution: Product has not been fully validated for medical applications. For research use only.

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- [1]. Lang, R.J., Harvey, J.R., and Mulholland, E.L. Sodium (2-sulfonatoethyl) methanethiosulfonate prevents S-nitroso-L-cysteine activation of Ca^{2+} -activated K^{+} (BKCa) channels in myocytes of the guinea-pig taenia caeca. *Br. J. Pharmacol.* 139(6), 1153-1163 (2003).
- [2]. Li, R.A., Tsushima, R.G., Kallen, R.G., et al. Pore residues critical for μ -CTX binding to rat skeletal muscle Na^{+} channels revealed by cysteine mutagenesis. *Biophys. J.* 73(4), 1874-1884 (1997).
- [3]. Guan, L., and Kaback, H.R. Site-directed alkylation of cysteine to test solvent accessibility of membrane proteins. *Nature Protocols* 2(8), 2012-2017 (2007).
- [4]. Engh, A.M., and Maduke, M. Cysteine accessibility in CIC-0 supports conservation of the CIC intracellular vestibule. *Journal of General Physiology* 125(6), 601-617 (2014).
- [5]. Liu, X., Alexander, C., Serrano, J., et al. Variable reactivity of an engineered cysteine at position 338 in cystic fibrosis transmembrane conductance regulator reflects different chemical states of the thiol. *The Journal of Biological Chemistry* 281(12), 8275-8285 (2006).

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