Data Sheet (Cat.No.TYD-00784)

TargetMol

Sodium sulfite

Chemical Properties

CAS No. : 7757-83-7

Formula: Na2O3S

Molecular Weight: 126.04

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Sodium sulfite is a biochemical reagent utilized as a biomaterial or organic compound in life science research. Sodium sulfite is commonly employed in biochemical, analytical, and biomaterial-related investigations, where Sodium sulfite serves as a useful reagent for experimental and methodological applications.
Targets(IC50)	Others
In vitro	Method: Human hepatocyte L02 cells were exposed to sodium sulfite at concentrations ranging from 10^{-5} to 10^{-2} M for 72 h, and cell viability was evaluated. Rresult: Sodium sulfite inhibited L02 cell viability in a concentration-dependent manner, with an IC50 of 4.68×10^{-4} M after 72 h.[1] Method: Isolated human neutrophils were treated with sodium sulfite, and superoxide production, fMLP-induced oxidative responses, total RNA synthesis, cell morphology, and apoptosis were evaluated. Rresult: Sodium sulfite directly induced superoxide production within 5 min and concentration-dependently enhanced fMLP-induced superoxide production. It also concentration-dependently increased gene expression within approximately 4 h, but did not induce cell-shape changes or alter neutrophil apoptosis after 20 h.[2] Method: Rat gastric mucosal RGM1 cells were exposed to sodium sulfite at concentrations of 0–5 mM for 20 h, and cytotoxicity and oxidative-stress markers were evaluated. Rresult: Sodium sulfite caused significant cytotoxicity in RGM1 cells and increased protein carbonyls, 8-hydroxy-2′-deoxyguanosine, and the accumulation of carbonylated protein aggregates, indicating oxidative protein and DNA damage.[3] Method: RBL-2H3 mast cells were exposed to 2–8 mM sodium sulfite, and reactive oxygen species generation, pyroptosis-related proteins, membrane integrity, and mast-cell degranulation were evaluated. NAC or MCC950 was used to investigate the involvement of ROS and NLRP3. Rresult: Sodium sulfite increased ROS generation and the expression of NLRP3, caspase-1, GSDMD-N, IL-1β, and IL-18; induced cell-membrane rupture; and increased β-hexosaminidase and histamine release. NAC and MCC950 attenuated these effects, indicating that sodium sulfite induced mast-cell pyroptosis and degranulation through the ROS/NLRP3 pathway.[4]
In vivo	Method: Sodium sulfite solutions were used to remove dissolved oxygen and establish a chemically induced hypoxia model in Caenorhabditis elegans.

In vivo	Rresult: Sodium sulfite generated controllable hypoxic conditions and induced hypoxia-related death, morphological cellular defects, and stabilization of hypoxia-inducible factor 1 in C. elegans, producing responses similar to physical hypoxia.[5]

Solubility Information

Solubility	H2O: 160.00 mg/mL (1269.44 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	7.934 mL	39.6699 mL	79.3399 mL
5 mM	1.5868 mL	7.934 mL	15.868 mL
10 mM	0.7934 mL	3.967 mL	7.934 mL
50 mM	0.1587 mL	0.7934 mL	1.5868 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Han X, et al. Mechanism analysis of toxicity of sodium sulfite to human hepatocytes L02. Mol Cell Biochem. 2020; 473(1-2):25-37.

Labbé P, et al. Functional responses of human neutrophils to sodium sulfite (Na_2SO_3) in vitro. Hum Exp Toxicol. 1998;17(11):600-605.

Oshimo M, et al. Sodium sulfite causes gastric mucosal cell death by inducing oxidative stress. Free Radic Res. 2021;55(6):731-743.

Liu M, et al. Sodium sulfite-induced mast cell pyroptosis and degranulation. J Agric Food Chem. 2021;69(27):7755-7764.

Jiang B, et al. Sodium sulfite is a potential hypoxia inducer that mimics hypoxic stress in Caenorhabditis elegans. J Biol Inorg Chem. 2011;16(2):267-274.