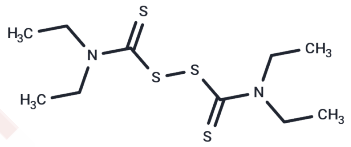
Data Sheet (Cat.No.T0054)

TargetMol

Disulfiram

Chemical Properties



CAS No. : 97-77-8

Formula: C10H20N2S4

Molecular Weight: 296.54

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	Disulfiram (TETD) is an inhibitor of the acetaldehyde dehydrogenase ALDH, inhibiting hALDH1 and hALDH2 (IC50=0.15/1.45 μM) with specificity. Disulfiram is acutely sensitized to alcohol and also inhibits GSDMD pore formation.
Targets(IC50)	Pyroptosis,Dehydrogenase,Interleukin
In vitro	Disulfiram inhibits the P-glycoprotein efflux pump, suppresses the transcription factor NF-κB (nuclear factor-κB), reduces angiogenesis, and inhibits tumor growth in mice. Its antitumor activity is associated with in vivo protease inhibition. Disulfiram also induces apoptosis. In severe combined immunodeficient mice with melanoma xenografts, it impedes growth and angiogenesis, an effect that is enhanced by zinc supplementation.
In vivo	Disulfiram, clinically employed as an anti-alcoholism agent, potently inhibits both constitutive and 5-FU-induced NF-κB activity in a dose-dependent manner. In the DLD-1 and RKO (WT) cell lines, Disulfiram significantly augments the apoptotic effects of 5-FU and synergistically enhances its cytotoxicity. In melanoma cells, co-treatment with copper or zinc ions reduces cyclin A expression compared to Disulfiram alone and inhibits proliferation in vitro. Moreover, Disulfiram decreases viable cell count, with copper chloride addition markedly intensifying DSF-induced cell death.
Cell Research	The effect of disulfiram (0.15-5.0 μM) or sodium diethyldithiocarbamate (1.0 μM) on proliferation of malignant cell lines is studied in cultures stimulated with 10% FBS. Cell numbers are quantitated 24 to 72 hours later, as outlined below. In some experiments, disulfiram is added immediately after cells are plated. In other experiments, cells are plated and allowed to grow for 24 to 72 hours before fresh medium with disulfiram is added and cell numbers are assayed 24 to 72 hours later. Synergy is studied between disulfiram and?N,N′-bis(2-chloroethyl-N-nitrosourea (carmustine, 1.0-1,000 μM) or cisplatin (0.1-100 μg/mL) added to medium. The effect of metal ions on disulfiram is studied with 0.2 to 10 μM Cu2+?(provided as CuSO4), Zn2+?(as ZnCl2), Ag+?(as silver lactate), or Au3+?(as HAuCl4·3Water) ions added to growth medium, buffered to physiologic pH. To provide a biologically relevant source of copper, medium is supplemented with human ceruloplasmin at doses replicating low and high normal adult serum concentrations (250 and 500 mg/mL).

Solubility Information

Solubility	20% Cremophor EL+80% Saline: 10 mg/mL (33.72 mM),Solution. DMSO: 20 mg/mL (67.44 mM),Sonication is recommended. Ethanol: 29.7 mg/mL (100.16 mM),Sonication is recommended. 10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2.97 mg/mL (10.02 mM),Solution. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.3722 mL	16.8611 mL	33.7223 mL
5 mM	0.6744 mL	3.3722 mL	6.7445 mL
10 mM	0.3372 mL	1.6861 mL	3.3722 mL
50 mM	0.0674 mL	0.3372 mL	0.6744 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.

Reference

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