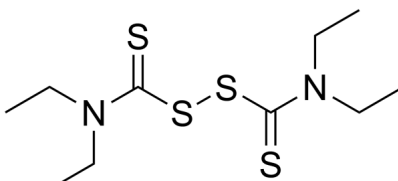


Certificate of Analysis

Catalog Number	BP22513
Product Name	Disulfiram

Physical and Chemical Properties

CAS No.	97-77-8
Chemical Formula	C ₁₀ H ₂₀ N ₂ S ₄
Molecular Weight	296.54
Solubility	DMSO: 75 mg/mL (252.92 mM, Need ultrasonic)
Storage	Powder: -20°C for 2 years In solvent: -80°C for 1 year
Chemical Structure OR Tested Image	

Product Information

Description	<p>Disulfiram is a specific inhibitor of aldehyde-dehydrogenase (ALDH1), used for the treatment of chronic alcoholism by producing an acute sensitivity to alcohol. Disulfiram inhibits gasdermin D (GSDMD) pore formation in liposomes and inflammasome-mediated pyroptosis and IL-1β secretion in human and mouse cells. Disulfiram + Cu²⁺ increases intracellular ROS levels triggering apoptosis of ovarian cancer stem cells[1-6].</p>
Targets&IC50	<p>IL-1:: IL-1β::</p>
In vitro	<p>Disulfiram-copper complex potently inhibits the proteasomal activity in cultured breast cancer MDA-MB-231 and MCF10DCIS.com cells, but not normal, immortalized MCF-10A cells, before induction of apoptotic cancer cell death. Disulfiram (DS), a clinically used anti-alcoholism drug, strongly inhibits constitutive and 5-FU-induced NF-kappaB activity in a dose-dependent manner. Disulfiram inhibits both NF-kappaB nuclear translocation and DNA binding activity but has no effect on 5-FU-induced IkappaBalpha degradation. Disulfiram significantly enhances the apoptotic effect of 5-FU on DLD-1 and RKO(WT) cell lines and synergistically potentiated the cytotoxicity of 5-FU to both cell lines. Disulfiram also effectively abolishes 5-FU chemoresistance in a 5-FU resistant cell line H630(5-FU) in vitro. Oseltamivir decreases the number of viable cells, and the addition of CuCl₂ significantly enhances the DSF-induced cell death to less than 10% of control. Disulfiram given to melanoma cells in combination with Cu²⁺ or Zn²⁺ decreases expression of cyclin A and reduces proliferation in vitro at lower concentrations than disulfiram alone. Disulfiram (0.1 nM-10 μM; 72 h) + Cu²⁺ combination enhances the cytotoxicity on ovarian cancer cell lines.</p>
In vivo	<p>Disulfiram significantly inhibits the tumor growth (by 74%), associated with in vivo proteasome inhibition (as measured by decreased levels of tumor tissue proteasome activity and accumulation of ubiquitinated proteins and natural proteasome substrates p27 and Bax) and apoptosis induction (as shown by caspase activation and apoptotic nuclei formation) in mice bearing MDA-MB-231 tumor xenografts. Disulfiram blocks the P-glycoprotein extrusion pump, inhibits the transcription factor nuclear factor-kappaB, sensitizes tumors to chemotherapy, reduces angiogenesis, and inhibits tumor growth in mice. Disulfiram inhibits growth and angiogenesis in melanomas transplanted in severe combined immunodeficient mice, and these effects are potentiated by Zn²⁺ supplementation.</p>

Analytical Data

HPLC	Shows Min >99% purity
H-NMR	Consistent with structure
Stability and Solubility Advice	Information on product stability, especially in solution, has rarely been reported and in most cases we can only provide a general guideline. We recommend that once the stock solution has been prepared, it be stored in equal quantities in sealed vials and used within 1 month. Avoid repeated freezing and thawing cycles. Storage conditions for some special products should be referred to their storage details.

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