Web: www.taiclone.com
Tel: +886-2-2735-9682
Email: order@taiclone.com

Disulfiram

Catalog No: tcsc2209

Available Sizes

Size: 1g

Size: 5g

Specifications

CAS No:
97-77-8

Formula:
$C_{10}H_{20}N_2S_4$

Pathway:
Metabolic Enzyme/Protease

Target:
Aldehyde Dehydrogenase (ALDH)

Purity / Grade:
>98%

Solubility:
DMS : 75 mg/mL (252.92 mM; Need ultrasonic)

Alternative Names:
Tetraethylthiuram disulfide;TETD

Observed Molecular Weight:
296.54

Product Description

Disulfiram is a specific inhibitor of **aldehyde-dehydrogenase (ALDH1)**, used for the treatment of chronic alcoholism by producing an acute sensitivity to alcohol.

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In Vitro: 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[1]. 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[2]. Oseltamivir decreases the number of viable cells, and the addition of $CuCl_2$ significantly enhances the DSF-induced cell death to less than 10% of control[3]. Disulfiram given to melanoma cells in combination with Cu^{2+} or Zn^{2+} decreases expression of cyclin A and reduces proliferation in vitro at lower concentrations than disulfiram alone[4] .

In Vivo: 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[1]. 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 Zn^{2+} supplementation[4].