

Product Data Sheet

Product Name: Disulfiram-d20

Cat. No.: GC45727

Chemical Properties

Cas. No. 1216403-88-1

SMILES S=C(N(C([2H])([2H])C([2H])([2H])[2H])C([2H])([2H])C([2H])([2H])[2H])SSC(N(C([2H])([2H])C([2H])([2H])[2H])C([2H])([2H])C([2H])([2H])[2H])C([2H])([2H])C([2H])([2H])[2H])=S

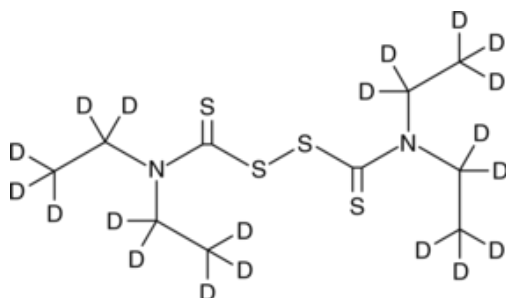
Formula C10D20N2S4 M.Wt 316.7

Solubility DMF: soluble, DMSO: soluble, Methanol: soluble 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.

Structure



Background

Disulfiram-d20 is intended for use as an internal standard for the quantification of disulfiram by GC- or LC-MS. Disulfiram is a copper and zinc chelator and an irreversible inhibitor of aldehyde dehydrogenase (IC₅₀ = 0.1 mM).¹ It also inhibits the copper-dependent enzyme dopamine β-hydroxylase, which prevents the breakdown of dopamine.² When in complex with copper, disulfiram has been shown to inhibit purified 20S proteasome (IC₅₀ = 7.5 μM) and 26S proteasome (IC₅₀ = 20 μM) from MDA-MB-0231 breast cancer cells.^{3,4} Disulfiram (at 250 nM) induces reactive oxygen species, activates JNK and p38 pathways, and inhibits NF-κB activity, which suppresses self-renewal.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

in cancer stem cells.^{5,6}

[1. Kraemer, R.J., and Deitrich, R.A. Isolation and characterization of human liver aldehyde dehydrogenase. J. Biol. Chem. 243(24), 6402-6408 (1968).|2. Haile, C.N., De La Garza, R., II, Mahoney, J.J., III, et al. The impact of disulfiram treatment on the reinforcing effects of cocaine: A randomized clinical trial. PLoS One 7(11), e47702 (2012).|3. Chen, D., Cui, Q.C., Yang, H., et al. Disulfiram, a clinically used anti-alcoholism drug and copper-binding agent, induces apoptotic cell death in breast cancer cultures and xenografts via inhibition of the proteasome activity. Cancer Res. 66(21), 10425-10433 (2006).|4. Schmitt, S.M., Frezza, M., and Dou, Q.P. New applications of old metal-binding drugs in the treatment of human cancer. Front. Biosci. (Schol. Ed.) 4, 375-391 (2012).|5. Liu, P., Brown, S., Goktug, T., et al. Cytotoxic effect of disulfiram/copper on human glioblastoma cell lines and ALDH-positive cancer-stem-like cells. Br. J. Cancer 107(9), 1488-1497 (2012).|6. Chiba, T., Suzuki, E., Yuki, K., et al. Disulfiram eradicates tumor-initiating hepatocellular carcinoma cells in ROS-p38 MAPK pathway-dependent and -independent manners. PLoS One 9(1), e84807 (2014).

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA