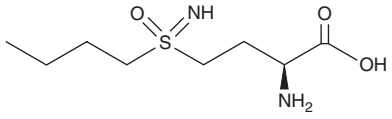
PRODUCT INFORMATION

L-Buthionine-(S,R)-Sulfoximine

Item No. 14484

CAS Registry No.: 83730-53-4
Formal Name: 2S-amino-4-(S-butylsulfonimidoyl)-butanoic acid
Synonyms: BSO, NSC 326231
MF: $C_8H_{18}N_2O_3S$
FW: 222.3
Purity: ≥98%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

L-Buthionine-(S,R)-sulfoximine is supplied as a crystalline solid. Aqueous solutions of L-buthionine-(S,R)-sulfoximine can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of L-buthionine-(S,R)-sulfoximine in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

L-Buthionine-(S,R)-sulfoximine is an irreversible inhibitor of γ-glutamylcysteine synthetase (K_i = 25 µM).[1] It inhibits the proliferation of ZAZ and M14 melanoma cells, as well as A2780 ovarian and MCF-7 breast cancer cells (IC_{50}s = 4.9, 18, 8.5, and 26.5 µM, respectively).[2] L-Buthionine-(S,R)-sulfoximine (100µM) induces ferroptosis in A172 and T98G glioblastoma cells.[3] It increases reactive oxygen species (ROS) levels in HeLa cells when used at a concentration of 10 µM. L-Buthionine-(S,R)-sulfoximine (1 mM), in combination with methylglyoxal, induces apoptosis of bovine aortic endothelial cells (BAECs).[4] It increases the number of eye spots in the retinal pigment epithelium, an indicator of DNA deletions, in mouse pups when administered to pregnant dams at concentrations of 2 and 20 mM in the drinking water.[5] L-Buthionine-(S,R)-sulfoximine decreases cysteine and glutathione (GSH) levels in fetal mice when administered to pregnant dams.

References

1. Griffith, O.W. Mechanism of action, metabolism, and toxicity of buthionine sulfoximine and its higher homologs, potent inhibitors of glutathione synthesis. *J. Biol. Chem* **257(22)**, 13704-13712 (1982).
2. Fruehauf, J.P., Zonis, S., al-Bassam, M., *et al.* Selective and synergistic activity of L-S,R-buthionine sulfoximine on malignant melanoma is accompanied by decreased expression of glutathione-S-transferase. *Pigment Cell Res.* **10(4)**, 236-249 (1997).
3. Hayashima, K. and Katoh, H. Expression of gamma-glutamyltransferase 1 in glioblastoma cells confers resistance to cystine deprivation-induced ferroptosis. *J. Biol. Chem.* **298(3)**, 101703 (2022).
4. Takahashi, K., Tatsunami, R., Oba, T., *et al.* Buthionine sulfoximine promotes methylglyoxal-induced apoptotic cell death and oxidative stress in endothelial cells. *Biol. Pharm. Bull.* **33(4)**, 556-560 (2010).
5. Reliene, R. and Schiestl, R.H. Glutathione depletion by buthionine sulfoximine induces DNA deletions in mice. *Carcinogenesis* **27(2)**, 240-244 (2006).

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