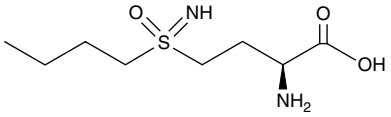
Product Information

Buthionine Sulfoximine

Item No. 14484

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



Laboratory Procedures

For long term storage, we suggest that buthionine sulfoximine (BSO) be stored as supplied at -20°C. It should be stable for at least two years.

BSO is supplied as a crystalline solid. BSO is sparingly soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. For biological experiments, we suggest that organic solvent-free aqueous solutions of BSO be prepared by directly dissolving the BSO compound in aqueous buffers. The solubility of BSO in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

BSO is an irreversible inhibitor of γ-glutamylcysteine synthetase (K_i <100 µM), the rate-limiting enzyme for L-glutathione (GSH) synthesis, that induces oxidative stress in cells by depleting GSH.[1,2] Administration of BSO leads to decreased GSH levels in virtually all tissues and is associated with tissue damage and apoptosis.[3,4] Whereas elevated glutathione levels are associated with tumor cell resistance, BSO has been shown to enhance the toxicity of various chemotherapeutic agents in drug-resistant tumors.[5]

References

1. Reliene, R. and Schiestl, R.H. Glutathione depletion by buthionine sulfoximine induces DNA deletions in mice. *Carcinogenesis* **27(2)**, 240-244 (2006).
2. 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).
3. 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).
4. Han, Y.H., Moon, H.J., You, B.R., *et al.* The effects of buthionine sulfoximine, diethyldithiocarbamate or 3-amino-1,2,4-triazole on propyl gallate-treated HeLa cells in relation to cell growth, reactive oxygen species and glutathione. *Int. J. Mol. Med.* **24(2)**, 261-268 (2009).
5. Lewis-Wambi, J.S., Kim, H.R., Wambi, C., *et al.* Buthionine sulfoximine sensitizes antihormone-resistant human breast cancer cells to estrogen-induced apoptosis. *Breast Cancer Res.* **10(6)**, 1-13 (2008).

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