Small Molecules

L-Buthionine-(S,R)-sulfoximine

Inhibits γ-glutamylcysteine synthetase

Catalog #100-0560	250 mg
100-0561	500 mg

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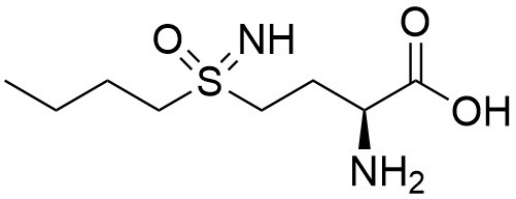
Product Description

L-Buthionine-(S,R)-sulfoximine is a potent and irreversible inhibitor of γ-glutamylcysteine synthetase (γGCS; K_i < 100 µM) and used to deplete glutathione and sensitize cells to anticancer agents (Griffith; Hibi et al.; Lewis-Wambi et al.; Marengo et al.). γGCS is a rate-limiting enzyme in the glutathione (GSH) biosynthetic pathway and essential for glutathione homeostasis and cell survival (Hibi et al.).

Molecular Name:	L-Buthionine-(S,R)-sulfoximine
Alternative Names:	BSO; NSC 326231
CAS Number:	83730-53-4
Chemical Formula:	$C_8H_{18}N_2O_3S$
Molecular Weight:	222.3 g/mol
Purity:	≥ 98%
Chemical Name:	2S-amino-4-(S-butylsulfonimidoyl)-butanoic acid
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	• PBS (pH 7.2) ≤ 22 mM For example, to prepare a 10 mM stock solution in PBS, resuspend 10 mg in 4.5 mL of PBS. Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in PBS at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

Published Applications

CANCER RESEARCH
· Decreases glutathione levels and elevates reactive oxygen species production leading to apoptosis in neuroblastomas (Marengo et al.).
· Predisposes estrogen-independent human breast cancer cells to estradiol-induced apoptosis (Lewis-Wambi et al.).

References

Griffith OW. (1982) Mechanism of action, metabolism, and toxicity of buthionine sulfoximine and its higher homologs, potent inhibitors of glutathione synthesis. J Biol Chem 257(22): 13704–12.

Hibi T et al. (2004) Crystal structure of gamma-glutamylcysteine synthetase: insights into the mechanism of catalysis by a key enzyme for glutathione homeostasis. Proc Natl Acad Sci USA 101(42): 15052–7.

Lewis-Wambi JS et al. (2008) Buthionine sulfoximine sensitizes antihormone-resistant human breast cancer cells to estrogen-induced apoptosis. Breast Cancer Res 10(6): R104.

Marengo B et al. (2008) Mechanisms of BSO (L-buthionine-S,R-sulfoximine)-induced cytotoxic effects in neuroblastoma. Free Radic Biol Med 44(3): 474–82.

Related Small Molecules

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This product is hazardous. Please refer to the Safety Data Sheet (SDS).