

# Product data sheet



MedKoo Cat#: 206723 Name: Buthionine Sulfoximine CAS#: 5072-26-4 Chemical Formula: C <sub>8</sub> H <sub>18</sub> N <sub>2</sub> O <sub>3</sub> S Exact Mass: 222.1038 Molecular Weight: 222.303		
Product supplied as:	Powder	
Purity (by HPLC):	≥ 98%	
Shipping conditions	Ambient temperature	
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.	

## 1. Product description:

Buthionine Sulfoximine, also known as NSC-326231, is a gamma-glutamylcysteine synthetase inhibitor potentially for the treatment of solid tumors.

## 2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

## 3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
Water	42.84	192.71

## 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.50 mL	22.49 mL	44.98 mL
5 mM	0.90 mL	4.50 mL	9.00 mL
10 mM	0.45 mL	2.25 mL	4.50 mL
50 mM	0.09 mL	0.45 mL	0.90 mL

## 5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

## 6. Recommended literature which reported protocols for in vitro and in vivo study

### In vitro study

1. Valdovinos-Flores C, Limón-Pacheco JH, León-Rodríguez R, Petrosyan P, Garza-Lombó C, Gonsbatt ME. Systemic L-Buthionine -S-R-Sulfoximine Treatment Increases Plasma NGF and Upregulates L-cys/L-cys2 Transporter and  $\gamma$ -Glutamylcysteine Ligase mRNAs Through the NGF/TrkA/Akt/Nrf2 Pathway in the Striatum. *Front Cell Neurosci.* 2019 Jul 23;13:325. doi: 10.3389/fncel.2019.00325. PMID: 31396052; PMCID: PMC6664075.
2. Vázquez C, Mejía-Tlachi M, González-Chávez Z, Silva A, Rodríguez-Zavala JS, Moreno-Sánchez R, Saavedra E. Buthionine sulfoximine is a multitarget inhibitor of trypanothione synthesis in *Trypanosoma cruzi*. *FEBS Lett.* 2017 Dec;591(23):3881-3894. doi: 10.1002/1873-3468.12904. Epub 2017 Nov 27. PMID: 29127710.

### In vivo study

1. Garza-Lombó C, Petrosyan P, Tapia-Rodríguez M, Valdovinos-Flores C, Gonsbatt ME. Systemic L-buthionine-S-R-sulfoximine administration modulates glutathione homeostasis via NGF/TrkA and mTOR signaling in the cerebellum. *Neurochem Int.* 2018 Dec;121:8-18. doi: 10.1016/j.neuint.2018.10.007. Epub 2018 Oct 6. PMID: 30300680.
2. Yu M, Liu Y, Duan Y, Chen Y, Han J, Sun L, Yang X. Inhibition of glutathione production by L-S,R-buthionine sulfoximine activates hepatic ascorbate synthesis - A unique anti-oxidative stress mechanism in mice. *Biochem Biophys Res Commun.* 2017 Feb 26;484(1):56-63. doi: 10.1016/j.bbrc.2017.01.072. Epub 2017 Jan 20. PMID: 28115164.

## 7. Bioactivity

# Product data sheet



## Biological target:

DL-Buthionine-(S,R)-sulfoximine is a potent inhibitor of glutamylcysteine synthetase biosynthesis.

---

## In vitro activity

Thus, this study next examined the modulatory effects of BSO on the mRNA expression of CNS AA transporters that provide L-cys, such as *lat1* and *eaac1*, and L-cys<sub>2</sub>/glutamate, such as *xct*, in the striatum. A significant increase in mRNA levels was detected for all the genes evaluated after BSO injection (Figure 5). These results show that BSO treatment modulates the levels of the transcripts encoding AA transporters related to L-cys/L-cys<sub>2</sub> availability in the striatum.

Reference: Front Cell Neurosci. 2019; 13: 325. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6664075/>

## In vivo activity

The present study found that systemic L-buthionine-S-R-sulfoximine (BSO) administration selectively altered GSH homeostasis and EAAT3 levels in the mice cerebellum. Intraperitoneal treatment of mice with 6 mmol/kg of BSO depleted GSH and GSSG in the liver at 2 h of treatment.

Reference: Neurochem Int. 2018 Dec;121:8-18. <https://pubmed.ncbi.nlm.nih.gov/30300680/>

*Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.*