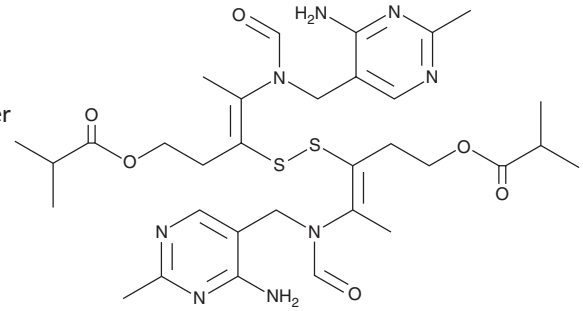
PRODUCT INFORMATION

Sulbutiamine

Item No. 46182

CAS Registry No.: 3286-46-2
Formal Name: 2-methyl-propanoic acid, 1,1′-[dithio*bis*[3-[1-[[(4-amino-2-methyl-5-pyrimidinyl)methyl] formylamino]ethylidene]-3,1-propanediyl]] ester
Synonym: Isobutyrylthiamine Disulfide
MF: $C_{32}H_{46}N_8O_6S_2$
FW: 702.9
Purity: ≥98%
Supplied as: A 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

Sulbutiamine is supplied as a solid. A stock solution may be made by dissolving the sulbutiamine in the solvent of choice, which should be purged with an inert gas. Sulbutiamine is sparingly soluble (1-10 mg/ml) in acetonitrile.

Description

Sulbutiamine is a lipid-soluble, brain-penetrant derivative of thiamine (Item Nos. 25656 | 25332), also known as vitamin B_1, that is composed of two thiamine molecules linked by a disulfide bond and each containing an isobutyryl group.[1,2] It crosses cellular membranes and is converted to thiamine intracellularly.[2] Sulbutiamine increases thiamine levels in the serum, kidney, medulla, cerebellum, and cerebral cortex when administered at a dose of 52 mg/kg.[3] It increases the viability of neurons in rat hippocampal slices in an *in vitro* model of ischemia using oxygen-glucose deprivation (OGD).[1] Sulbutiamine (500 mg/kg) reduces neuroinflammation and oxidative stress in a rat model of cerebral ischemia.[4] It also reduces anxiety- and depressive-like behaviors and improves recognition memory in the same model. Sulbutiamine (25 mg/kg) improves object recognition memory in experimentally naïve rats.[5]

References

1. Kwag, J., Majid, A.S.A., and Kang, K.D. Evidence for neuroprotective effect of sulbutiamine against oxygen-glucose deprivation in rat hippocampal CA1 pyramidal neurons. *Biol. Pharm. Bull.* **34(11),** 1759-1764 (2011).
2. Sambon, M., Napp, A., Demelenne, A., *et al.* Thiamine and benfotiamine protect neuroblastoma cells against paraquat and β-amyloid toxicity by a coenzyme-independent mechanism. *Heliyon* **5(5),** e01710 (2019).
3. Bettendorff, L., Weekers, L., Wins, P., *et al.* Injection of sulbutiamine induces an increase in thiamine triphosphate in rat tissues. *Biochem. Pharmacol.* **40(11),** 2557-2560 (1990).
4. Arslan, E. and Ordu, M. Sulbutiamine ameliorates cognitive impairment, neuroinflammation, and oxidative stress in rats with cerebral ischemia. *Bratisl. Med. J.* **127,** 1530-1542 (2026).
5. Bizot, J.-C., Herpin, A., Pothion, S., *et al.* Chronic treatment with sulbutiamine improves memory in an object recognition task and reduces some amnesic effects of dizocilpine in a spatial delayed-non-match-to-sample task. *Prog. Neuropsychopharmacol. Biol. Psychiatry* **29(6),** 928-935 (2005).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

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