

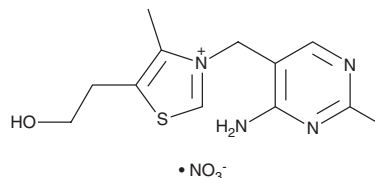
# PRODUCT INFORMATION



## Thiamine (nitrate)

Item No. 25332

**CAS Registry No.:** 532-43-4  
**Formal Name:** 3-[(4-amino-2-methyl-5-pyrimidinyl)methyl]-5-(2-hydroxyethyl)-4-methyl-thiazolium, mononitrate  
**Synonyms:** Aneurine, Vitamin B<sub>1</sub>  
**MF:** C<sub>12</sub>H<sub>17</sub>N<sub>4</sub>OS • NO<sub>3</sub>  
**FW:** 327.4  
**Purity:** ≥98%  
**UV/Vis.:** λ<sub>max</sub>: 234, 267, 332 nm  
**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

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

### Description

Thiamine is a water-soluble vitamin with antioxidant, neuroprotective, and anxiolytic properties.<sup>1-4</sup> It inhibits lipid peroxidation in rat liver microsomes and free radical oxidation of oleic acid (Item No. 90260) *in vitro* when used at concentrations ranging from 1 to 100 μM.<sup>1</sup> *In vivo*, thiamine (100 mg/kg) reduces hepatic levels of aspartate aminotransferase (AST) and alanine aminotransferase (ALT), lipid peroxidation, and protein damage in a rat model of acute ethanol intoxication.<sup>2</sup> It reverses predator stress-induced suppression of hippocampal neurogenesis and decreases the latency of step-down from a platform, indicating anxiolytic-like activity in mice.<sup>3</sup> Thiamine (8.5 mg/100 g food) reduces neurodegeneration and increases survival in *Slc19a3*<sup>-/-</sup> mice, a model of thiamine metabolism dysfunction syndrome-2 (THMD-2).<sup>4</sup>

### References

1. Lukienko, P.I., Mel'nichenko, N.G., Zverinskii, I.V., *et al.* Antioxidant properties of thiamine. *Bull. Exp. Biol. Med.* **130**(9), 874-876 (2000).
2. Portari, G.V., Ovidio, P.P., Deminice, R., *et al.* Protective effect of treatment with thiamine or benfotiamine on liver oxidative damage in rat model of acute ethanol intoxication. *Life Sci.* **162**, 21-24 (2016).
3. Vignisse, J., Sambon, M., Gorlova, A., *et al.* Thiamine and benfotiamine prevent stress-induced suppression of hippocampal neurogenesis in mice exposed to predation without affecting brain thiamine diphosphate levels. *Mol. Cell. Neurosci.* **82**, 126-136 (2017).
4. Suzuki, K., Yamada, K., Fukuhara, Y., *et al.* High-dose thiamine prevents brain lesions and prolongs survival of *Slc19a3*-deficient mice. *PLoS One* **12**(6), e0180279 (2017).

#### 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.

#### WARRANTY AND LIMITATION OF REMEDY

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