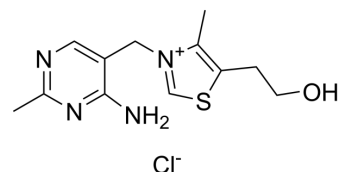


Thiamine monochloride

| | |
|---------------------------|--|
| Cat. No.: | HY-A0100 |
| CAS No.: | 59-43-8 |
| Molecular Formula: | C ₁₂ H ₁₇ ClN ₄ OS |
| Molecular Weight: | 300.81 |
| Target: | Endogenous Metabolite; Bacterial |
| Pathway: | Metabolic Enzyme/Protease; Anti-infection |
| Storage: | 4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture) |



SOLVENT & SOLUBILITY

| | | | | | | |
|---|--|----------------------|-------------|-------------|-------------|--------------|
| In Vitro | H ₂ O : ≥ 100 mg/mL (332.44 mM) | | | | | |
| | DMSO : 1 mg/mL (3.32 mM; Need ultrasonic) | | | | | |
| | * "≥" means soluble, but saturation unknown. | | | | | |
| | Preparing Stock Solutions | Solvent | Mass | 1 mg | 5 mg | 10 mg |
| | | Concentration | | | | |
| 1 mM | | | 3.3244 mL | 16.6218 mL | 33.2436 mL | |
| 5 mM | | | 0.6649 mL | 3.3244 mL | 6.6487 mL | |
| | 10 mM | | 0.3324 mL | 1.6622 mL | 3.3244 mL | |
| Please refer to the solubility information to select the appropriate solvent. | | | | | | |
| In Vivo | 1. Add each solvent one by one: PBS Solubility: ≥ 100 mg/mL (332.44 mM); Clear solution | | | | | |

BIOLOGICAL ACTIVITY

| | | |
|-------------------------------------|--|-----------------------------|
| Description | Thiamine monochloride (Vitamin B1) is an essential vitamin that plays an important role in cellular production of energy from ingested food and enhances normal neuronal activities. | |
| IC₅₀ & Target | Microbial Metabolite | Human Endogenous Metabolite |
| In Vitro | Thiamine levels in the blood of homozygous KO and KI mice fed a conventional diet are decreased to 0.058±0.051 and 0.126±0.092 μM, respectively, at 7 weeks compared to WT mice (0.796±0.259 μM). When WT and homozygous KO and KI mice are fed a thiamine-restricted diet (thiamine: 0.60 mg/100 g food), blood thiamine concentration at 5 and 14 days is markedly decreased to 0.010±0.009 and 0.010±0.006 μM, respectively, compared to WT mice (0.609±0.288 μM). Thiamine concentration in brain homogenate of WT mice fed a conventional diet is 3.81±2.18 nmol/g wet weight, and that of KO and KI is 1.33±0.96 and 2.16±1.55 nmol/g wet weight, respectively. Notably, thiamine concentration in brain homogenate decreased steadily in KO and KI mice fed a thiamine-restricted diet (thiamine: 0.60 mg/100 g food) for 5 days (0.95±0.72 | |

nmol/g wet weight) and 14 days (1.11 ± 0.24 nmol/g wet weight), respectively, compared to WT (3.65 ± 1.02 nmol/g wet weight), before the mice presented an phenotype of disease^[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

WT, homozygous, and heterozygous KO and KI mice feed a conventional diet (thiamine: 1.71 mg/100 g) survive for over 6 months without any phenotype of disease. Homozygous KO and KI mice feed a thiamine-restricted diet (thiamine: 0.60 mg/100 g food) showed paralysis, weight loss, and immobility, and die within 12 and 30 days, respectively. Similarly, homozygous KO and KI mice feed a thiamine-restricted diet with an even lower percentage of thiamine (thiamine: 0.27 mg/100 g food) die within 14 and 18 days, respectively. However, WT and heterozygous KO and KI mice feed a thiamine-restricted diet (thiamine: 0.60 mg or 0.27 mg/100g food) survive for over 6 months without any phenotype of disease^[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration ^[2]

Slc19a3 E314Q KI mice are maintained routinely with conventional diet, which has a thiamine concentration (thiamine hydrochloride, MW=337.3) of 1.71 mg/100 g food. Two types of thiamine-restricted food based on "purified diets for laboratory rodents" are prepared, in which thiamine concentration is 0.60 mg/100 g food (35% thiamine of conventional food) or 0.27 mg/100 g food (16% thiamine of conventional food). A high-thiamine-containing food is also prepared from AIN-93M, in which thiamine concentration is five times that of CE-2 (thiamine: 8.50 mg/100 g food). Thiamine concentration is determined at Japan Food Research Laboratories^[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Kenneth Osiezagha, et al. Thiamine Deficiency and Delirium. *Innov Clin Neurosci*. 2013 Apr; 10(4): 26-32.

[2]. Kaoru Suzuki, et al. High-dose thiamine prevents brain lesions and prolongs survival of Slc19a3-deficient mice. *PLoS One*. 2017; 12(6): e0180279.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898

Fax: 609-228-5909

E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA