# Thiamine pyrophosphate

**Cat. No.:** HY-113076

**CAS No.:** 154-87-0

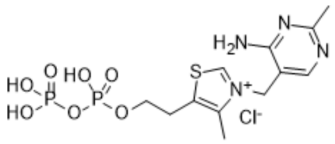
**Molecular Formula:** $C_{12}H_{19}ClN_4O_7P_2S$

**Molecular Weight:** 460.77

**Target:** Endogenous Metabolite

**Pathway:** Metabolic Enzyme/Protease

**Storage:** -20°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**

$H_2O$ : 41.67 mg/mL (90.44 mM; Need ultrasonic)
DMSO : 1 mg/mL (2.17 mM; Need ultrasonic)

**Preparing Stock Solutions**

| Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 2.1703 mL | 10.8514 mL | 21.7028 mL |
| 5 mM | 0.4341 mL | 2.1703 mL | 4.3406 mL |
| 10 mM | 0.2170 mL | 1.0851 mL | 2.1703 mL |

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**

1. Add each solvent one by one: PBS
Solubility: 50 mg/mL (108.51 mM); Clear solution; Need ultrasonic

## BIOLOGICAL ACTIVITY

**Description**

Thiamine pyrophosphate is the coenzyme form of Vitamin B1, and is a required intermediate in the pyruvate dehydrogenase complex and the ketoglutarate dehydrogenase complex. Thiamine pyrophosphate is necessary for oxidative phosphorylation and the pentose phosphate pathway by acting as a cofactor for α-ketoacid dehydrogenases[1][2][3].

**$IC_{50}$ & Target**

Human Endogenous Metabolite

**In Vivo**

Thiamine pyrophosphate (25 mg/kg, i.p.) inhibits the ischemia-reperfusion induced oxidative damage in rat ovarian tissue[1].

Thiamine pyrophosphate (20 mg/kg, i.p., once a day for 14 days) prevents Cisplatin (HY-17394) induced cardiotoxicity, and associated oxidative stress and heart injury in rats[2].

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

## REFERENCES

[1]. Demiryilmaz I, et al. A comparative investigation of biochemical and histopathological effects of thiamine and thiamine pyrophosphate on ischemia-reperfusion induced oxidative damage in rat ovarian tissue. Arch Pharm Res. 2013 Sep;36(9):1133-9.

[2]. Coskun R, et al. The protective effect of thiamine pyrophosphate, but not thiamine, against cardiotoxicity induced with cisplatin in rats. Drug Chem Toxicol. 2014 Jul;37(3):290-4.

[3]. de Jong L, et al. Thiamine pyrophosphate biosynthesis and transport in the nematode Caenorhabditis elegans. Genetics. 2004 Oct;168(2):845-54.



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