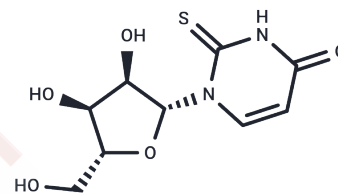


## 2-Thiouridine

## Chemical Properties

CAS No. :	20235-78-3
Formula:	C <sub>9</sub> H <sub>12</sub> N <sub>2</sub> O <sub>5</sub> S
Molecular Weight:	260.27
Storage:	Store at low temperature Powder: -20°C for 3 years   In solvent: -80°C for 1 year <small>Actual storage temperature shall be subject to the COA.</small>



## Biological Description

Description	2-Thiouridine (s2U) is a naturally occurring modified nucleobase present in transfer RNAs that stabilizes U:A base pairing while modestly destabilizing U:G wobble interactions. 2-Thiouridine influences codon-anticodon recognition, translational accuracy, and RNA conformational dynamics, and is extensively used in studies of nucleic acid structure, RNA biology, and the engineering of functional RNA-based biomolecules.
Targets(IC50)	Others
In vitro	In viral replication assays, 2-Thiouridine inhibited the replication of several positive-strand RNA viruses (DENV2, ZIKV, SARS-CoV, SARS-CoV-2) with effective concentrations ranging from 0.625 to 40 $\mu$ M [1].
In vivo	In DENV2-infected mice, oral administration of 2-thiouridine (50-150 mg/kg, twice daily) prolonged survival and reduced viral RNA loads in the serum and spleen. In SARS-CoV-2 mouse models, treatment via intravenous injection (2-20 mg/kg, once daily) or high-dose oral administration (300 mg/kg, twice daily) for 5 days resulted in increased survival rates, lower lung viral titers, and reduced levels of inflammatory cytokines [4].

## Solubility Information

Solubility	H <sub>2</sub> O: 8 mg/mL (30.74 mM),Sonication is recommended. Ethanol: 2 mg/mL (7.68 mM),Sonication is recommended. PBS (pH 7.2): 5 mg/mL (19.21 mM),Sonication is recommended. DMF: 10 mg/mL (38.42 mM),Sonication is recommended. DMSO: 40 mg/mL (153.69 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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### Preparing Stock Solutions

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	1mg	5mg	10mg
1 mM	3.8422 mL	19.2108 mL	38.4216 mL
5 mM	0.7684 mL	3.8422 mL	7.6843 mL
10 mM	0.3842 mL	1.9211 mL	3.8422 mL
50 mM	0.0768 mL	0.3842 mL	0.7684 mL

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Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

### Reference

Heuberger BD, et al. Replacing uridine with 2-thiouridine enhances the rate and fidelity of nonenzymatic RNA primer extension. *J Am Chem Soc.* 2015 Feb 25;137(7):2769-75.

Kumar RK, et al. Synthesis and studies on the effect of 2-thiouridine and 4-thiouridine on sugar conformation and RNA duplex stability. *Nucleic Acids Res.* 1997 Mar 15;25(6):1272-80.

Larsen AT, et al. Thermodynamic insights into 2-thiouridine-enhanced RNA hybridization. *Nucleic Acids Res.* 2015 Sep 18;43(16):7675-87.

Uemura K, et al. 2-thiouridine is a broad-spectrum antiviral nucleoside analogue against positive-strand RNA viruses. *Proc Natl Acad Sci U S A.* 2023 Oct 17;120(42):e2304139120.

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