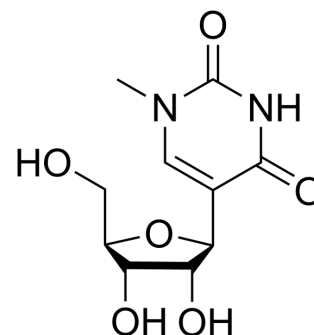


## N1-Methylpseudouridine

<b>Cat. No.:</b>	HY-112582		
<b>CAS No.:</b>	13860-38-3		
<b>Molecular Formula:</b>	C <sub>10</sub> H <sub>14</sub> N <sub>2</sub> O <sub>6</sub>		
<b>Molecular Weight:</b>	258.23		
<b>Target:</b>	Nucleoside Antimetabolite/Analog; DNA/RNA Synthesis		
<b>Pathway:</b>	Cell Cycle/DNA Damage		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 100 mg/mL (387.25 mM; Need ultrasonic)  
 H<sub>2</sub>O : 50 mg/mL (193.63 mM; Need ultrasonic)

	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
Preparing Stock Solutions	1 mM	3.8725 mL	19.3626 mL	38.7252 mL
	5 mM	0.7745 mL	3.8725 mL	7.7450 mL
	10 mM	0.3873 mL	1.9363 mL	3.8725 mL

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

#### In Vivo

- Add each solvent one by one: PBS  
Solubility: 50 mg/mL (193.63 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (9.68 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (9.68 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (9.68 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

N1-methyl-pseudouridine (1-Methylpseudouridine), a methylpseudouridine, outperforms 5 mC and 5 mC/N1-methyl-pseudouridine in translation. N1-methyl-pseudouridine in mRNA enhances translation through eIF2α-dependent and independent mechanisms by increasing ribosome density<sup>[1]</sup>.

<p><b>In Vitro</b></p>	<p>Incorporation of N1-methyl-pseudouridine into mRNA modifies mRNAs produced higher amounts of luc than the standard Luc mRNA in HEK293T cells. Incorporation of N1-methyl-pseudouridine nucleoside modification in both Luc and GFP mRNA enhances the initiation step of translation, in part by suppressing eIF2<math>\alpha</math> phosphorylation. In addition, polysome formation and growth on the NN1-methyl-pseudouridine-containing Luc mRNA is enhanced due to the reduction of elongation rate.? In all the in vitro translation systems, incorporation of N1-methyl-pseudouridine in Luc and GFP mRNAs dramatically enhanced translation. The N1-methyl-pseudouridine-Luc mRNA is associated with heavier polysomes than Luc mRNA<sup>[1]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>								
<p><b>In Vivo</b></p>	<p>N1-methylpseudouridine-incorporated mRNA outperforms pseudouridine-incorporated mRNA by providing enhanced protein expression and reduced immunogenicity in mammalian cell lines and mice<sup>[2]</sup>.  ?N1-methyl-pseudouridine (1-Methylpseudouridine) (20 <math>\mu</math>g; I.m. or i.d. routes for 21 days) and m5C/ N1-methyl-pseudouridine-modified mRNA respectively have a higher translational capacity than <math>\Psi</math> and m5C/<math>\Psi</math>-modified mRNA in vivo [2].  MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1"> <tr> <td>Animal Model:</td> <td>7-week-old Balb/c mice<sup>[1]</sup></td> </tr> <tr> <td>Dosage:</td> <td>20 <math>\mu</math>g</td> </tr> <tr> <td>Administration:</td> <td>I.m. or i.d. routes for 21 days</td> </tr> <tr> <td>Result:</td> <td>had a higher translational capacity.</td> </tr> </table>	Animal Model:	7-week-old Balb/c mice <sup>[1]</sup>	Dosage:	20 $\mu$ g	Administration:	I.m. or i.d. routes for 21 days	Result:	had a higher translational capacity.
Animal Model:	7-week-old Balb/c mice <sup>[1]</sup>								
Dosage:	20 $\mu$ g								
Administration:	I.m. or i.d. routes for 21 days								
Result:	had a higher translational capacity.								

## REFERENCES

- [1]. Nance KD, Meier JL. Modifications in an Emergency: The Role of N1-Methylpseudouridine in COVID-19 Vaccines. ACS Cent Sci. 2021;7(5):748-756.
- [2]. Svitkin YV, et al. N1-methyl-pseudouridine in mRNA enhances translation through eIF2 $\alpha$ -dependent and independent mechanisms by increasing ribosome density. Nucleic Acids Res. 2017 Jun 2;45(10):6023-6036.
- [3]. Andries O, et al. N(1)-methylpseudouridine-incorporated mRNA outperforms pseudouridine-incorporated mRNA by providing enhanced protein expression and reduced immunogenicity in mammalian cell lines and mice. J Control Release. 2015 Nov 10;217:337-44.

**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