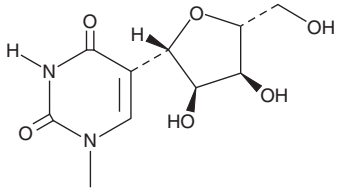
PRODUCT INFORMATION

1-Methylpseudouridine

Item No. 35401

CAS Registry No.:	13860-38-3
Formal Name:	1-methyl-5-β-D-ribofuranosyl-2,4(1H,3H)-pyrimidinedione
Synonyms:	m1ψ, N^1-methyl-ψ, N^1-Methylpseudouridine, NSC 240023, U-50228
MF:	$C_{10}H_{14}N_2O_6$
FW:	258.2
Purity:	≥98%
UV/Vis.:	λ_{max}: 211, 271 nm
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years
Item Origin:	Synthetic



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

1-Methylpseudouridine is supplied as a solid. A stock solution may be made by dissolving the 1-methylpseudouridine in the solvent of choice, which should be purged with an inert gas. 1-Methylpseudouridine is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of 1-methylpseudouridine in these solvents is approximately 10 and 3 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of 1-methylpseudouridine can be prepared by directly dissolving the solid in aqueous buffers. The solubility of 1-methylpseudouridine in PBS (pH 7.2) is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

1-Methylpseudouridine is a nucleoside analog that has been found in *Streptomyces platensis*.[1] It increases the thermodynamic and biological stability of RNA.[2-4] Unlike unmodified mRNA, 1-methylpseudouridine-containing mRNA does not induce IFN-β secretion in A549 cells, indicating low immunogenicity.[3] Intramuscular or intradermal administration of luciferase mRNA containing 1-methylpseudouridine *via* lipid complexes increases luciferase activity in mice. Formulations containing 1-methylpseudouridine incorporated into mRNA have been used in the development of mRNA-based vaccines.

References

1. Argoudelis, A.D. and Mizsak, S.A. 1-Methylpseudouridine, a metabolite of *Streptomyces platensis*. *J. Antibiot. (Tokyo)* **29(8)**, 818-823 (1976).
2. Kierzek, E., Malgowska, M., Lisowiec, J., *et al.* The contribution of pseudouridine to stabilities and structure of RNAs. *Nucleic Acids Res.* **42(5)**, 3492-3501 (2014).
3. Andries, O., Mc Cafferty, S., De Smedt, S.C., *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* **217**, 337-344 (2015).
4. Parr, C.J., Wada, S., Kotake, K., *et al.* N^1-Methylpseudouridine substitution enhances the performance of synthetic mRNA switches in cells. *Nucleic Acids Res.* **48(6)**, e35 (2020).

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