

PRODUCT INFORMATION



1-Deoxynojirimycin (hydrochloride)

Item No. 10011718

CAS Registry No.: 73285-50-4

Formal Name: 2R-(hydroxymethyl)-3R,4R,5S-piperidinetriol, monohydrochloride

Synonyms: 1-dNM, Moranoline

MF: C₆H₁₃NO₄ • HCl

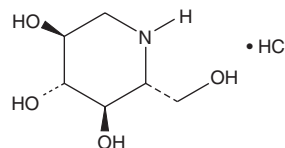
FW: 199.6

Purity: ≥95%

Supplied as: A crystalline solid

Storage: -20°C

Stability: As supplied, 2 years from the QC date provided on the Certificate of Analysis, when stored properly



Laboratory Procedures

1-Deoxynojirimycin (1-dNM) (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the 1-dNM (hydrochloride) in the solvent of choice. 1-dNM (hydrochloride) is soluble in the organic solvent DMSO, which should be purged with an inert gas, at a concentration of approximately 10 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-dNM (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 1-dNM (hydrochloride) in PBS, pH 7.2, is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

1-dNM (hydrochloride), produced by *Bacillus* species, is a glucose analog that potently inhibits α -glucosidase I and II. It prevents the formation of complex N-linked oligosaccharides in yeast and intact mammalian cells by inhibiting both α -glucosidase I and II with IC₅₀ values of ~2 μ M.^{1,2} The FDA has granted orphan drug designation to 1-dNM (hydrochloride) for the treatment of Pompe disease, an inherited lysosomal storage disorder caused by a mutation that alters the structure and stability of α -glucosidase. 1-dNM, at a concentration of 0.4 mM, is reported to inhibit virus spread in HIV-infected lymphocyte cultures by interfering with α -glucosidase activity.^{3,4}

References

1. Suanier, B., Kilker, R.D., Jr., Tkacz, J.S., *et al.* Inhibition of N-linked complex oligosaccharide formation by 1-deoxynojirimycin, an inhibitor of processing glucosidases. *J. Biol. Chem.* **257**(23), 14155-14161 (1982).
3. Suh, K., Gabel, C.A., and Bergmann, J.E. Identification of a novel mechanism for the removal of glucose residues from high mannose-type oligosaccharides. *J. Biol. Chem.* **267**(30), 21671-21677 (1992).
4. Montefiori, D.C., Robinson, W.E., Jr., and Mitchell, W.M. Role of protein N-glycosylation in pathogenesis of human immunodeficiency virus type 1. *Proc. Nat Acad. Sci. USA* **85**, 9248-9252 (1988).
5. Papandréou, M.-J., Barbouche, R., Guieu, R., *et al.* The α -glucosidase inhibitor 1-deoxynojirimycin blocks human immunodeficiency virus envelope glycoprotein-mediated membrane fusion at the CXCR4 binding step. *Mol Pharmacol.* **61**, 186-193 (2002).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD

ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897

[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM

WWW.CAYMANCHEM.COM