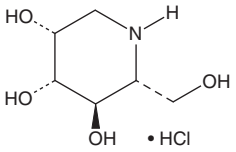
PRODUCT INFORMATION

1-Deoxymannojirimycin (hydrochloride)

Item No. 17178

CAS Registry No.:	73465-43-7
Formal Name:	2R-(hydroxymethyl)-3R,4R,5R-piperidinetriol, monohydrochloride
MF:	$C_6H_{13}NO_4$ • HCl
FW:	199.6
Purity:	≥98%
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



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

Laboratory Procedures

1-Deoxymannojirimycin (hydrochloride) is supplied as a crystalline solid. A stock solution may be made by dissolving the 1-deoxymannojirimycin (hydrochloride) in the solvent of choice, which should be purged with an inert gas. 1-Deoxymannojirimycin (hydrochloride) is soluble in the organic solvent DMSO 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-deoxymannojirimycin (hydrochloride) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 1-deoxymannojirimycin (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-Deoxymannojirimycin is a specific inhibitor of class I α-1,2-mannosidase (IC_{50} = 0.02 µM), a key enzyme for N-glycan processing in the endoplasmic reticulum and Golgi and for targeting misfolded proteins for translocation out of the endoplasmic reticulum and degradation by the proteasome.[1,2] By inhibiting α-1,2-mannosidase activity, this compound generates N-linked oligosaccharides with high mannose content, preventing misfolded protein degradation. This compound has been used for studies on glycoprotein processing and as a model for the development of anticancer and antiviral therapies.[3,4]

References

1. Vallee, F., Karaveg, K., Herscovics, A., *et al.* Structural basis for catalysis and inhibition of *N*-glycan processing class I α1,2-mannosidases. *J. Biol. Chem.* **275(52)**, 41287-41298 (2000).
2. Bischoff, J., Liscum, L., and Kornfeld, R. The use of 1-deoxymannojirimycin to evaluate the role of various α-mannosidases in oligosaccharide processing in intact cells. *J. Biol. Chem.* **261(10)**, 4766-4774 (1986).
3. Balzarini, J. The α(1,2)-mannosidase I inhibitor 1-deoxymannojirimycin potentiates the antiviral activity of carbohydrate-binding agents against wild-type and mutant HIV-1 strains containing glycan deletions in gp120. *FEBS Lett.* **581(10)**, 2060-2064 (2007).
4. Ogier-Denis, E., Trugnan, G., Sapin, C., *et al.* Dual effect of 1-deoxymannojirimycin on the mannose uptake and on the *N*-glycan processing of the human colon cancer cell line HT-29. *J. Biol. Chem.* **265(10)**, 5366-5369 (1990).

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