

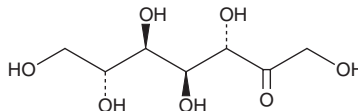
PRODUCT INFORMATION



D-Mannoheptulose

Item No. 16548

CAS Registry No.: 3615-44-9
Formal Name: D-manno-2-heptulose
Synonym: NSC 226836
MF: C₇H₁₄O₇
FW: 210.2
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

D-Mannoheptulose is supplied as a crystalline solid. A stock solution may be made by dissolving the D-mannoheptulose in the solvent of choice, which should be purged with an inert gas. D-Mannoheptulose is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of D-mannoheptulose in ethanol is approximately 1 mg/ml and approximately 20 mg/ml in DMSO and DMF.

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 D-mannoheptulose can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of D-mannoheptulose in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

D-Glucose is phosphorylated by glucokinase and three tissue-specific hexokinases to produce glucose-6-phosphate in humans. D-Mannoheptulose is a heptose that inhibits glucokinases and hexokinases from diverse organisms through competition with D-glucose ($K_i = 0.25$ mM).¹⁻³ It blocks glucose oxidation and glucose-mediated insulin release from pancreatic islet cells.^{4,5} D-Mannoheptulose prevents the conversion of glucose to glucose-6-phosphate that can mediate the activation of the carbohydrate response element binding protein.⁶ By blocking glucose phosphorylation, D-mannoheptulose causes transient hyperglycemia in dogs when given at 1 g/kg but not at 8 mg/kg, although postprandial energy expenditure is increased at the lower dose.⁷

References

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4. Ashcroft, S.J.H., Weerasinghe, L.C., and Randle, P.J. *Biochem. J.* **132(2)**, 223-231 (1973).
5. Johnson, D., Shepherd, R.M., Gill, D., et al. *Diabetes* **56(6)**, 1694-1702 (2007).
6. Li, M.V., Chen, W., Harmancey, R.N., et al. *Biochem. Biophys. Res. Commun.* **395(3)**, 395-400 (2010).
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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