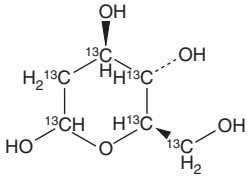
PRODUCT INFORMATION

2-deoxy-D-Glucose-$^{13}C_6$

Item No. 34312

Formal Name: (4R,5S,6R)-6-(hydroxymethyl-^{13}C) tetrahydro-2H-pyran-2,4,5-triol-2,3,4,5,6-$^{13}C_5$
Synonym: 2-DG-$^{13}C_6$
MF: $[^{13}C]_6H_8O_5$
FW: 170.1
Purity: ≥95% (mixture of isomers)
Supplied as: A 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

2-deoxy-D-Glucose-$^{13}C_6$ is supplied as a solid. A stock solution may be made by dissolving the 2-deoxy-D-glucose-$^{13}C_6$ in the solvent of choice. 2-deoxy-D-Glucose-$^{13}C_6$ is soluble in the organic solvent DMSO, which should be purged with an inert gas. It is also soluble in water. We do not recommend storing the aqueous solution for more than one day.

Description

2-deoxy-D-Glucose-$^{13}C_6$ is intended for use as an internal standard for the quantification of 2-deoxy-D-glucose (Item No. 14325) by GC- or LC-MS. 2-deoxy-D-Glucose is a glucose antimetabolite and an inhibitor of glycolysis.[1,2] It inhibits hexokinase, the enzyme that converts glucose to glucose-6-phosphate, as well as phosphoglucose isomerase, the enzyme that converts glucose-6-phosphate to fructose-6-phosphate.[3] 2-deoxy-D-Glucose (16 mM) induces apoptosis in SK-BR-3 cells, as well as inhibits the growth of 143B osteosarcoma cells cultured under hypoxic conditions when used at a concentration of 2 mg/ml.[4,5] *In vivo*, 2-deoxy-D-glucose (500 mg/kg) reduces tumor growth in 143B osteosarcoma and MV522 non-small cell lung cancer mouse xenograft models when used alone or in combination with doxorubicin (Item No. 15007) or paclitaxel (Item No. 10461).[6]

References

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2. Aft, R.L., Zhang, F.W., and Gius, D. Evaluation of 2-deoxy-D-glucose as a chemotherapeutic agent: Mechanism of cell death. *Br. J. Cancer* **87(7)**, 805-812 (2002).
3. Ralser, M., Wamelink, M.M., Struys, E.A., *et al.* A catabolic block does not sufficiently explain how 2-deoxy-D-glucose inhibits cell growth. *Proc. Natl. Acad. Sci. USA* **105(46)**, 17807-17811 (2008).
4. Liu, H., Savaraj, N., Priebe, W., *et al.* Hypoxia increases tumor cell sensitivity to glycolytic inhibitors: A strategy for solid tumor therapy (Model C). *Biochem. Pharmacol.* **64(12)**, 1745-1751 (2002).
5. Zhang, X.D., Deslandes, E., Villedieu, M., *et al.* Effect of 2-deoxy-D-glucose on various malignant cell lines *in vitro*. *Anticancer Res.* **26(5A)**, 3561-3566 (2006).
6. Maschek, G., Savaraj, N., Priebe, W., *et al.* 2-deoxy-D-glucose increases the efficacy of adriamycin and paclitaxel in human osteosarcoma and non-small cell lung cancers *in vivo*. *Cancer Res.* **64(1)**, 31-34 (2004).

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