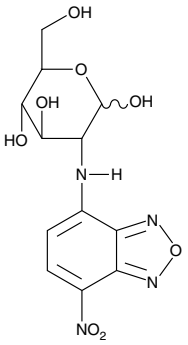
Product Information

2-NBDG

Item No. 11046

CAS Registry No.:	186689-07-6
Formal Name:	2-deoxy-2-[(7-nitro-2,1,3-benzoxadiazol-4-yl)amino]-D-glucose
Synonym:	NBD-Glucose
MF:	$C_{12}H_{14}N_4O_8$
FW:	342.3
Purity:	≥98% (mixture of α and β)
Stability:	≥2 years at -20°C
Supplied as:	A crystalline solid
UV/Vis.:	λ_{max}: 228, 266, 332, 465 nm



Laboratory Procedures

For long term storage, we suggest that 2-NBDG be stored as supplied at -20°C. It should be stable for at least two years.

2-NBDG is supplied as a crystalline solid. A stock solution may be made by dissolving the 2-NBDG in the solvent of choice. 2-NBDG is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of 2-NBDG in ethanol is approximately 20 mg/ml and approximately 10 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 2-NBDG can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of 2-NBDG in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

2-NBDG is a fluorescently-labeled deoxyglucose analog that is used primarily to directly monitor glucose uptake by living cells and tissues.[1,2] It is also used as a topical contrast reagent for the detection of neoplasia.[3,4] 2-NBDG can be used in real-time confocal, high-resolution, or wide-field fluorescence microscopy as well as in flow cytometry.[3,5-7]

References

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3. Nitin, N., Carlson, A.L., Muldoon, T., *et al.* Molecular imaging of glucose uptake in oral neoplasia following topical application of fluorescently labeled deoxy-glucose. *Int. J. Cancer* **124(11)**, 1-20 (2009).
4. Thekkek, N., Maru, D.M., Polydorides, A.D., *et al.* Pre-clinical evaluation of fluorescent deoxyglucose as a topical contrast agent for the detection of Barrett's-associated neoplasia during confocal imaging. *Technol. Cancer Res. Treat.* **10(5)**, 431-441 (2011).
5. Loaiza, A., Porras, O.H., and Barros, L.F. Glutamate triggers rapid glucose transport stimulation in astrocytes as evidenced by real-time confocal microscopy. *J. Neurosci.* **23(19)**, 7337-7342 (2003).
6. Langsner, R.J., Middleton, L.P., Sun, J., *et al.* Wide-field imaging of fluorescent deoxy-glucose in *ex vivo* malignant and normal breast tissue. *Biomed. Opt. Express* **2(6)**, 1514-1523 (2011).
7. Berney, M., Weilenmann, H.-U., and Egli, T. Flow-cytometric study of vital cellular functions in *Escherichia coli* during solar disinfection (SODIS). *Microbiology* **152**, 1719-1729 (2006).

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