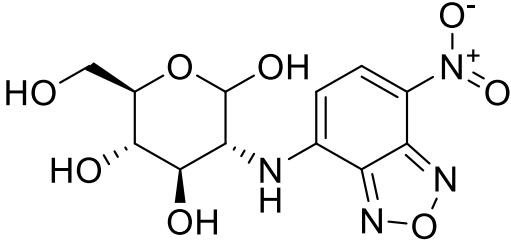


Product data sheet



MedKoo Cat#: 584465 Name: 2-NBDG CAS#: 186689-07-6 Chemical Formula: C ₁₂ H ₁₄ N ₄ O ₈ Exact Mass: 342.0812 Molecular Weight: 342.264	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

2-NBDG is a fluorescent derivative of glucose whose uptake is competitively inhibited by D-glucose, but not L-glucose or sucrose, in E. coli. It has been used to monitor glucose uptake by bacteria and live mammalian cells and in tumor biopsies.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	10.0	29.22
DMSO	37.41	109.30
Ethanol	11.5	33.60
PBS (pH 7.2)	10.0	29.22
Water	3.5	10.23

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.92 mL	14.61 mL	29.22 mL
5 mM	0.58 mL	2.92 mL	5.84 mL
10 mM	0.29 mL	1.46 mL	2.92 mL
50 mM	0.06 mL	0.29 mL	0.58 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Nitin N, Carlson AL, Muldoon T, El-Naggar AK, Gillenwater A, Richards-Kortum R. Molecular imaging of glucose uptake in oral neoplasia following topical application of fluorescently labeled deoxy-glucose. *Int J Cancer*. 2009 Jun 1;124(11):2634-42. doi: 10.1002/ijc.24222. PMID: 19173294; PMCID: PMC2700039.
2. Thekkekk N, Maru DM, Polydorides AD, Bhutani MS, Anandasabapathy S, Richards-Kortum R. 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*. 2011 Oct;10(5):431-41. doi: 10.7785/tert.2012.500220. PMID: 21895028; PMCID: PMC4527376.

In vivo study

1. Cai H, Peng F. 2-NBDG fluorescence imaging of hypermetabolic circulating tumor cells in mouse xenograft model of breast cancer. *J Fluoresc*. 2013 Jan;23(1):213-20. doi: 10.1007/s10895-012-1136-z. Epub 2012 Oct 9. PMID: 23054302; PMCID: PMC4592774.

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2. Tsytsarev V, Maslov KI, Yao J, Parameswar AR, Demchenko AV, Wang LV. In vivo imaging of epileptic activity using 2-NBDG, a fluorescent deoxyglucose analog. *J Neurosci Methods*. 2012 Jan 15;203(1):136-40. doi: 10.1016/j.jneumeth.2011.09.005. Epub 2011 Sep 14. PMID: 21939688; PMCID: PMC3221836.

7. Bioactivity

Biological target:

2-NBDG, a fluorescent D-glucose analog, is a fluorescent indicator for monitoring glucose uptake into living cells.

In vitro activity

Results of high-resolution and widefield imaging of 2-NBDG based molecular contrast in model cell-culture systems are shown in Figure 1. Figure 1 (a) shows the uptake of 2-NBDG in 1483 oral squamous carcinoma cell line; fluorescence is predominantly localized to the cytoplasm. The fluorescence signal from 2-NBDG is significantly higher than the cellular autofluorescence signal from unlabeled cells. Figure 1(b) demonstrates labeling of cells in a tissue culture phantom following topical delivery of 2-NBDG.

Reference: *Int J Cancer*. 2009 Jun 1;124(11):2634-42. <https://pubmed.ncbi.nlm.nih.gov/19173294/>

In vivo activity

Circulating breast cancer cells with increased uptake of 2-NBDG were detected in the blood samples of tumor-bearing mice following incubation of the blood samples with 2-NBDG and magnetic separation using magnetic beads conjugated with anti-EpCAM IgG. Circulating breast cancer cells with uptake of 2-NBDG were detected not only in the blood samples from the mice bearing visible SKBR-3 xenograft tumors, but also in the blood samples from the mice with no visible tumors after implantation of SKBR-3 tumor cells (Fig. 2a). Circulating breast cancer cells with uptake of 2-NBDG were also detected in the blood samples from the mice bearing MDA-MB-231 xenograft tumors (Fig. 2b), or BT474 xenograft tumors (Fig. 2c).

Reference: *J Fluoresc*. 2013 Jan;23(1):213-20. <https://pubmed.ncbi.nlm.nih.gov/23054302/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.