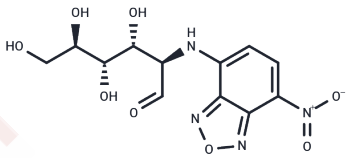
Data Sheet (Cat.No.T14017)

TargetMol

2-NBDG

Chemical Properties



CAS No. : 186689-07-6

Formula: C12H14N4O8

Molecular Weight: 342.26

Storage: Store at low temperature
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	2-NBDG is a fluorescent indicator for direct glucose uptake measurement. It is an indicator of cell viability.
Targets(IC50)	Others
In vitro	**METHODS**: Flow cytometry was used to detect glucose uptake: 1, Cells were seeded at 1*104/well in 96-well plates, and the experiment was performed within 24-48 h. The cells were incubated at 37 ℃ for 10-180 min. 2, Remove the cell culture medium, add fresh medium containing 2-NBDG (5-40 μM), and incubate for 10-180 min at 37 ℃. 3. Remove the medium and wash twice with pre-cooled PBS to stop the 2-NBDG uptake reaction. Resuspend in fresh medium and perform flow cytometry within 30 min. [1] The above information is based on published literature. Experimental procedures should be appropriately modified to meet specific research demands.
In vivo	**METHODS**: Glucose uptake by circulating breast cancer cells was detected by fluorescent microscopy: 1. A mouse blood sample (100 μL/mouse) was collected by puncturing the mouse saphenous vein. 2. Incubate the blood sample containing circulating breast cancer cells with 2-NBDG (5 μg/100 μL blood) for 30 min at 37℃ in a dark incubator. 3. Add the magnetic bead suspension (1μL 1%) to 100 μL of blood sample and incubate for 30 min at 4℃ with gentle shaking to promote binding of the magnetic beads to the circulating breast cancer cells. 4. Separate the circulating breast cancer cells from the blood using a magnetic separation rack, wash with PBS 3 times, resuspend in 100 μL PBS and transfer to a 96-well cell plate. 5. 2-NBDG uptake by circulating breast cancer cells was examined under a fluorescence microscope equipped with a 488 nm filter. Large cells with a fluorescent signal derived from fluorescent 2-NBDG uptake by cells were counted as hypermetabolic circulating breast cancer cells, and small-sized normal mouse blood cells (lymphocytes and RBCs) showed no or little 2-NBDG fluorescent signal. [2]

Cell Research	Flow cytometry to detect glucose uptake Operation steps: a. Cells were seeded in 96-well plates at 1*104/well and the experiment was performed within 24-48 h; b. Cell culture medium was removed, fresh culture medium containing 2-NBDG (5-40 μM) was added, and incubated at 37 ℃ for 10-180 min; c. Culture medium was removed, and the cells were washed twice with pre-cooled PBS to stop the 2-NBDG uptake reaction. Resuspended in fresh culture medium, flow cytometry was performed within 30 min. The above information is based on published literature. Experimental procedures should be appropriately modified to meet specific research demands.

Solubility Information

Solubility	H2O: 5 mg/mL (14.61 mM),Sonication and heating to 60℃ are recommended. DMSO: 52.5 mg/mL (153.39 mM) (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.9218 mL	14.6088 mL	29.2176 mL
5 mM	0.5844 mL	2.9218 mL	5.8435 mL
10 mM	0.2922 mL	1.4609 mL	2.9218 mL
50 mM	0.0584 mL	0.2922 mL	0.5844 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Zou C, et al. 2-NBDG as a fluorescent indicator for direct glucose uptake measurement. J Biochem Biophys Methods. 2005 Sep 30;64(3):207-15.
Zhang Y, Cai Y, Wang T, et al.A common tolerance mechanism of bacterial biofilms to antibiotics.bioRxiv.2023: 2023.01. 30.526163.
Ma Y, Pang Y, Cao R, et al.Targeting Parkin-regulated metabolomic change in cartilage in the treatment of osteoarthritis.iScience.2024
Cai H, et al. 2-NBDG fluorescence imaging of hypermetabolic circulating tumor cells in mouse xenograft model of breast cancer. J Fluoresc. 2013 Jan;23(1):213-20.
Zhang Y, Cai Y, Jin X, et al.Persistent glucose consumption under antibiotic treatment protects bacterial community.Nature Chemical Biology.2024: 1-9.
Zhang Y, Cai Y, Zhang B, et al.Spatially structured exchange of metabolites enhances bacterial survival and resilience in biofilms.Nature Communications.2024, 15(1): 7575.

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