

## 2-Deoxy-D-glucose

## Chemical Properties

CAS No. : 154-17-6

Formula: C<sub>6</sub>H<sub>12</sub>O<sub>5</sub>

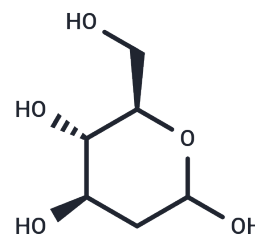
Molecular Weight: 164.16

Storage:

Store at low temperature, Store under nitrogen, Keep away from direct sunlight

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-Deoxy-D-glucose (2-DG) is an analog of glucose, an inhibitor of glycolysis. 2-Deoxy-D-glucose has antiviral activity, as well as inhibitory cell proliferation and apoptosis-inducing activity.
Targets(IC50)	Apoptosis, Hexokinase, HSV
In vitro	<p><b>METHODS:</b> Pancreatic cancer cells MIA PaCa2, BxPC-3, ASPC-1 and ovarian cancer cells OVCAR-3, HEY, SK-OV-3 were treated with 2-Deoxy-D-glucose (0.01-100 mM) for 48 h. Cell proliferation was detected using MTT.</p> <p><b>RESULTS:</b> 2-Deoxy-D-glucose showed significant antiproliferative activity against tumor cells with IC<sub>50</sub> values ranging from 1.45-13.34 mM. [1]</p> <p><b>METHODS:</b> Triple-negative breast cancer cells Hs578T were treated with 2-Deoxy-D-glucose (15 mM) for 24 days, and cell motility was detected by Migration assay and Invasion assay.</p> <p><b>RESULTS:</b> 2-Deoxy-D-glucose inhibited the migration and invasion of Hs578T cells. [2]</p>
In vivo	<p><b>METHODS:</b> To study the effects on leukocyte subpopulation distribution and function, 2-Deoxy-D-glucose (500-1500 mg/kg) was injected intraperitoneally into BDF1 mice once or thrice.</p> <p><b>RESULTS:</b> Blood glucose concentrations increased in a dose-dependent manner in mice injected with up to 1500 mg/kg of 2-Deoxy-D-glucose. Corticosterone levels, leukocyte counts in the spleen, and CD3+ cells in the thymus increased after one or three injections of 2-Deoxy-D-glucose up to 1500 mg/kg. 2-Deoxy-D-glucose administration induced dose-dependent changes in thymic and splenic cell distribution and function. [3]</p> <p><b>METHODS:</b> To test the antitumor activity in vivo, 2-Deoxy-D-glucose (1000 mg/kg) was administered intraperitoneally to C57BL/6 mice bearing melanoma B16 once daily for eight days.</p> <p><b>RESULTS:</b> 2-Deoxy-D-glucose significantly inhibited tumor growth, and TAMs showed a significant decrease in Arg, Fizz, CD206 and Vegf expression after 2-Deoxy-D-glucose treatment. [4]</p>
Cell Research	2x10 <sup>3</sup> H460 or H157 cells are seeded in 96-well cell culture plates. Cells are treated with 5 mM 2-DG only, 5 or 10 μM IGF1R inhibitor II only, or a combination of 2-DG and IGF1R inhibitor II. Cell growth inhibition is determined after 48 h by the CellTiter 96® Aqueous nonradioactive cell proliferation assay. (Only for Reference)

## Solubility Information

Solubility	H2O: 100 mg/mL (609.16 mM),Sonication is recommended. DMSO: 60 mg/mL (365.5 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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## Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	6.0916 mL	30.4581 mL	60.9162 mL
5 mM	1.2183 mL	6.0916 mL	12.1832 mL
10 mM	0.6092 mL	3.0458 mL	6.0916 mL
50 mM	0.1218 mL	0.6092 mL	1.2183 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

- Malm SW, et al. The anti-tumor efficacy of 2-deoxyglucose and D-allose are enhanced with p38 inhibition in pancreatic and ovarian cell lines. *J Exp Clin Cancer Res.* 2015 Apr 1;34(1):31.
- Yuhan C, Lu J, Xu Y, et al. The chemical reprogramming of unipotent adult germ cells towards authentic pluripotency and de novo establishment of imprinting. *Protein & Cell.* 2022
- Ma W, Wu Q, Wang S, et al. A breakdown of metabolic reprogramming in microglia induced by CKLF1 exacerbates immune tolerance in ischemic stroke. *Journal of Neuroinflammation.* 2023, 20(1): 1-23.
- O'Neill S, et al. 2-Deoxy-D-Glucose inhibits aggressive triple-negative breast cancer cells by targeting glycolysis and the cancer stem cell phenotype. *Sci Rep.* 2019 Mar 7;9(1):3788.
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- Zhao Q, et al. 2-Deoxy-d-Glucose Treatment Decreases Anti-inflammatory M2 Macrophage Polarization in Mice with Tumor and Allergic Airway Inflammation. *Front Immunol.* 2017 Jun 1;8:637.
- Huang CC, et al. *Dis Model Mech.* 2015, 8(10):1247-54.

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