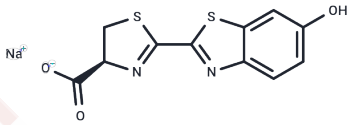
Data Sheet (Cat.No.T19743)

TargetMol

D-Luciferin Sodium

Chemical Properties



CAS No. : 103404-75-7

Formula: C11H7N2NaO3S2

Molecular Weight: 302.29

Storage: Keep away from direct sunlight,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	D-Luciferin Sodium is a specific natural substrate for firefly luciferase that catalyzes the production of characteristic yellow-green light in bioluminescent insects. It serves as a core tool for in vivo imaging, cell-level reporter gene detection, and analysis of luciferase activity in tissues and living organisms. The luciferase (luc) gene is a commonly used reporter gene for research and active molecule screening. Chemiluminescence technology is essentially background-free, making the luc reporter gene an ideal choice for detecting low levels of gene expression. Luciferase activity as low as 0.02 pg can be reliably measured in a standard fluorometer.
Targets(IC50)	Others
Cell Research	I. Solution preparation 1. Preparation of stock solution: Dissolve D-Luciferin sodium in saline or PBS to prepare a stock solution of appropriate concentration, with a common concentration range of 1-10mM. 2. Preparation of working solution: Dilute the D-Luciferin sodium stock solution to the required working solution concentration (generally 100 μM to 1 mM) II. In vivo and in vitro imaging Experimental steps: 1. Add to cells or animals: According to experimental requirements, inject or add D-Luciferin sodium into cell culture medium, animal body or target cells. For in vivo imaging of animals, it is usually administered by intraperitoneal injection or intravenous injection. 3. Reaction initiation: After D-Luciferin sodium reacts with luciferase, it produces detectable bioluminescence at a specific wavelength (usually around 550 nm). Use a bioluminescence imaging system (BLI) or a fluorescence detector for real-time monitoring. 4. Image acquisition: Use an imaging system to obtain luminescence signals and analyze image data to obtain bioluminescence information about cells, tissues or organs. II. Luciferase activity detection: Experimental steps: 1. Prepare D-Luciferin sodium solution (concentration is generally 100 μM to 1 mM). b. Take an appropriate amount of cell or animal sample labeled with luciferase.

Cell Research	c. Add D-Luciferin sodium solution to the sample to start the luminescence reaction. d. Use a bioluminescence detector to record the luminescence signal in real time and perform data analysis. 3. Cell experiment: Experimental steps: a. Cultivate cells with luciferase gene. b. Add an appropriate amount of D-Luciferin sodium solution and incubate until the reaction is complete. c. Detect the luminescence signal by a fluorescence spectrophotometer or bioluminescence imaging device. The above information is based on published literature. Experimental procedures should be appropriately modified to meet specific research demands.

Solubility Information

Solubility	DMSO: 16.67 mg/mL (55.15 mM),Sonication is recommended. H2O: 100 mg/mL (330.81 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween-80+45% Saline: 1.5 mg/mL (4.96 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.3081 mL	16.5404 mL	33.0808 mL
5 mM	0.6616 mL	3.3081 mL	6.6162 mL
10 mM	0.3308 mL	1.654 mL	3.3081 mL
50 mM	0.0662 mL	0.3308 mL	0.6616 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

Giuseppe Meroni, et al. D-Luciferin, derivatives and analogues: synthesis and in vitro/in vivo luciferase-catalyzed bioluminescent activity. ARKIVOC 2009 (i) 265-288.
Rajesh Shinde, et al. Luciferin derivatives for enhanced in vitro and in vivo bioluminescence assays. Biochemistry. 2006 Sep 19;45(37):11103-12.
Inoue Y, et al. Timing of imaging after d-luciferin injection affects the longitudinal assessment of tumor growthusing in vivo bioluminescence imaging. Int J Biomed Imaging. 2010;2010:471408.
Ghosh M, Gambhir SS, De A, Nowels K, Goris M, Wapnir I. Bioluminescent monitoring of NIS-mediated (131)I ablative effects in MCF-7 xenografts. Mol Imaging. 2006 Apr-Jun;5(2):76-84. PubMed PMID: 16954021; PubMed Central PMCID: PMC4160082.

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