D-Luciferin

Cat: IL2320

Storage: Powder: -20℃, 2 years; Insolvent (mother liquid): -20℃, 6 months; -80℃, 1 year (protect from light)

Introduction

At present, optical in vivo imaging (OIVI) mainly adopts bioluminescence and fluorescence. Bioluminescence is based on the principle that fluorescein enzyme can catalyze the chemiluminescence of the substrate, and implant the cell line that can stably express fluorescein enzyme in vitro into the animal body, which reacts with the substrate injected into the body in the later stage. The optical system is used to detect the light intensity, which indirectly reflects the changes in the number of cells or the positioning of cells. This technology has been widely used in many fields, the most commonly used is the establishment of tumor or disease animal models, and can be used in virology research, siRNA research, stem cell research, protein interaction research.

D-Luciferin is a common substrate for Luciferase, which is commonly used throughout biotechnology, especially in in vivo live imaging. In the presence of magnesium ions, luciferase reacts luciferin with ATP, which is then oxidized to form a dioxetane structure and emit a yellow-green light. Luciferin is encoded by the luc gene, which is present as a reporter gene in a variety of cells. Due to the low background nature of chemiluminescence, the luc gene can be monitored at very low expression levels.

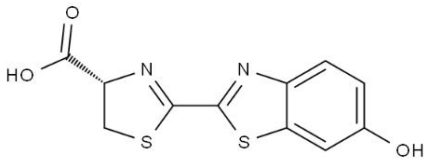
Parameter

Ex/Em: 328/533 nm

CAS No: 2591-17-5

Molecular Formula: $C_{11}H_8N_2O_3S_2$

Molecular Weight: 280.32



Solubility: Soluble in Water/DMSO

Applications: 1) In vitro chemiluminescence analysis (in vitro)
2) In vivo imaging experiments (in vivo)
3) High sensitivity ATP analysis.

Protocols (*only for reference*)

In vitro luminescence detection

(1) Configure 200× of D-Luciferin stock solution (30mg/mL) with sterile water.
Note: Unused stock solution is recommended to be stored in portions at -20°C to avoid repeated freezing and thawing.

(2) Dilute the stock solution with cell culture medium 1:200 to obtain 1×D-Luciferin working solution (final concentration 150 μg/mL).

(3) Removal of medium from cultured cells.

(4) Add appropriate amount of 1 × D-Luciferin working solution to the cells, and then perform image analysis.
Note: The signal can be enhanced by detecting the cells after a short incubation at 37°C before image analysis.

In Vivo Imaging Analyzer

(1) Dissolve 10 mg of D-Luciferin with 667 μL of sterile D-PBS (without Mg^{2+}, Ca^{2+}) to obtain D-Luciferin working solution (15 mg/mL), and filter through 0.2 μm filter membrane to remove bacteria.
(2) Refer to the table below and inject different volumes depending on the injection method.
(3) Imaging analysis was performed 5-15 min after injection into the body.

Injection Methods	Injectable dose (for reference only)
Intravenous injection	At a concentration of 10 μL/g body weight, add the corresponding volume of 15 mg/mL Fluorescein Working Solution.
Intraperitoneal injection	At a concentration of 10 μL/g body weight, add the corresponding volume of 15 mg/mL Fluorescein Working Solution.
Intramuscular injection	50 μL at a concentration of 1-2 mg/mL Fluorescein Working Solution.
Intranasal injection	50 μL at a concentration of 3 mg/mL Fluorescein Working Solution.

Note

1. The final concentration of the working solution is recommended to be optimized for different experimental systems.
2. All fluorescent dyes have quenching problems, please try to avoid light to slow down the fluorescence quenching.
3. For your safety and health, please wear lab coat and disposable gloves.
4. This product is for scientific research use only. Do not use in medicine, clinical diagnosis or treatment, food and cosmetics. Do not store in ordinary residential areas.

Related Literature

[1]. Wu H, Peng Z, Xu Y, Sheng Z, Liu Y, Liao Y, Wang Y, Wen Y, Yi J, Xie C, Chen X, Hu J, Yan B, Wang H, Yao X, Fu W, Ouyang H. Engineered adipose-derived stem cells with IGF-1-modified mRNA ameliorates osteoarthritis development. Stem Cell Res Ther. 2022 Jan 15;13(1):19. doi: 10.1186/s13287-021-02695-x. PMID: 35033199; PMCID: PMC8760691.（IF:7.5）

[2]. Han P, Wang C, Li F, Li M, Nie J, Xu M, Feng H, Xu L, Jiang C, Guan Q, Huang L. Valsa mali PR1-like protein modulates an apple valine-glutamine protein to suppress JA signaling-mediated immunity. Plant Physiol. 2024 Mar 29;194(4):2755-2770. doi: 10.1093/plphys/kiae020. PMID: 38235781.（IF:7.4）

[3]. Cao B, Zhao R, Li H, Xu X, Gao J, Chen L, Wei B. Inhibition of androgen receptor enhanced the anticancer effects of everolimus through targeting glucose transporter 12. Int J Biol Sci. 2023 Jan 1;19(1):104-119. doi: 10.7150/ijbs.75106. PMID: 36594084; PMCID: PMC9760431.（IF:6.0）

Note: For more literature, please visit the Solarbio official website.