D-Luciferin potassium

Cat. No.: HY-12591B

CAS No.: 115144-35-9

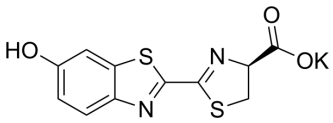
Molecular Formula: $C_{11}H_7KN_2O_3S_2$

Molecular Weight: 318.41

Target: Others

Pathway: Others

Storage: 4°C, sealed storage, away from moisture and light
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 25 mg/mL (78.52 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	3.1406 mL	15.7030 mL	31.4060 mL
	5 mM	0.6281 mL	3.1406 mL	6.2812 mL
	10 mM	0.3141 mL	1.5703 mL	3.1406 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: PBS
Solubility: 8.33 mg/mL (26.16 mM); Clear solution; Need ultrasonic and warming and heat to 60°C

BIOLOGICAL ACTIVITY

Description

D-Luciferin (D-(-)-Luciferin) potassium is the substrate of luciferases that catalyze the production of light in bioluminescent insects[1].

In Vitro

D-luciferin is the natural substrate of the enzyme luciferase (Luc), that catalyzes the production of the typical yellowgreen light of fireflies.The present review covers the synthesis of D-luciferin and derivatives or analogues that are substrates or inhibitors of the luciferase from the American firefly Photinus pyralis, the enzyme more frequently used in techniques of in vitro and optical imaging[1].
D-Luciferin exhibits a decrease in the measured K_m in PC3M-Luc cell lysates with a K_m of 34 μM[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Bioluminescence imaging (BLI) using the firefly luciferase (Fluc) as a reporter gene and D-luciferin as a substrate is currently the most widely employed technique. The total signal intensity is plotted against the time after D-luciferin injection to generate a time-intensity curve. In addition to the peak signal, the signals at fixed time points (5, 10, 15, and 20 min) after D-

luciferin injection are determined as alternatives to the peak signal. The signal in a given time-intensity curve is normalized for the peak signal in the curve to represent the pattern of temporal changes after D-luciferin injection[3].
Inject with 10 μL of D-luciferin (intraperitoneally or intravenously) stock solution per gram of body weight: normally ~200 μL for a 20 g mouse for a standard 150 mg/kg injection.
Thaw D-Luciferin (either Potassium or Sodium Salt) at room temperature and dissolve in dPBS (no calcium or magnesium) to a final concentration of 15 mg/mL. Pre-wet a 0.22 μm filter by drawing through 5-10 mL of sterile H_2O and discard water. Sterilize the D-Luciferin solution through the prepared 0.22 μm syringe filter.
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Animal Administration [2]

Mice[2]
In vivo BLI is performed using a cooled charge-coupled device camera system (IVIS Imaging System 100) 3, 5, 7, 10, 12, 14, 19, 21, 24, and 28 days after the inoculation of HCT116-Luc cells. Mice are injected with 75 mg/kg D-luciferin in 100 μL of phosphate-buffered saline subcutaneously. Beginning 5 min after injection, dorsal luminescent images with an exposure time of 1 s are acquired sequentially at a rate of one image per min until 20 min after D-luciferin injection. Data acquisition is continued until 40 min postinjection on days 3 or 5 and until 25 min on day 7, because of the prolonged time course of light emission. Binning is 4 and the field of view is 15 cm.
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Cell Metab. 2022 Sep 7;S1550-4131(22)00359-X.
- Cell Mol Gastroenterol Hepatol. 2021;12(3):839-856.
- New Phytol. 2022 Sep 2.
- Cell Chem Biol. 2021 Nov 23;S2451-9456(21)00482-7.
- Acta Pharm Sin B. 12 March 2022.

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REFERENCES

[1]. Giuseppe Meroni, et al. D-Luciferin, derivatives and analogues: synthesis and in vitro/in vivo luciferase-catalyzed bioluminescent activity. ARKIVOC 2009 (i) 265-288.

[2]. 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.

[3]. Rajesh Shinde, et al. Luciferin derivatives for enhanced in vitro and in vivo bioluminescence assays. Biochemistry. 2006 Sep 19;45(37):11103-12.

Caution: Product has not been fully validated for medical applications. For research use only.

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