

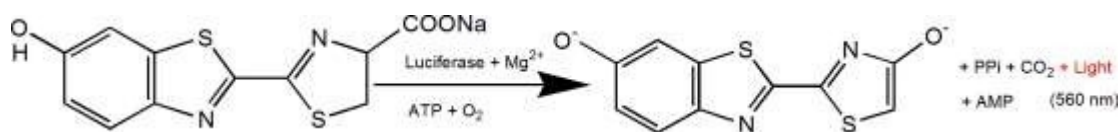
D-luciferin, Sodium Salt D

Product Information

Product Name	Cat#	Size
D-luciferin, Sodium Salt D	40901ES01	100mg
	40901ES02	500 mg
	40901ES03	1g
	40901ES08	5g
	40901ES10	10g

Product Description

D-luciferin is a common substrate for Luciferase and is widely used throughout biotechnology, especially in vivo imaging Technology. The mechanism of action is that luciferin (the substrate) is oxidized to emit light in response to ATP and luciferase (see figure below). It's produced when there's too much luciferin. The light quantum number was positively correlated with the concentration of luciferase. Plasmids carrying luciferase encoding gene (Luc) were transfected into cells and introduced into study animals such as rats and mice. In vivo, fluorescein is then injected and changes in light intensity are detected using bioluminescence imaging (BLI) to monitor disease progression or drug efficacy in real time and so on. ATP's influence on the reaction system can also be used to indicate energy or vital signs according to changes in bioluminescence intensity.



D-luciferin is also commonly used in in vitro studies, including luciferase and ATP levels analysis; Reporter gene analysis; High-throughput sequencing and various contamination tests. There are currently three product forms: D-luciferin (free acid), D-luciferin salts (sodium and potassium salts). The main difference lies in solubility: the former is water-soluble and the solubility of buffer system is weak, except soluble in weak bases such as low concentration NaOH and KOH solutions, soluble in methanol and DMSO; The latter is easily soluble in water or buffer, easy to use, solvent non-toxic, especially suitable for in vivo experiments. As a solution, there is no substantial difference between the three products in the vast majority of applications.

Product Properties

English synonym	(S)-4,5-Dihydro-2-(6-hydroxy-2-benzothiazolyl)-4-thiazolecarboxylic acid sodium salt; D-Luciferin firefly, sodium salt monohydrate;
CAS NO.	103404-75-7
Formula	NaC ₁₁ H ₇ N ₂ O ₃ S ₂ ·H ₂ O
Molecular weight	320.32 g/mol
Appearance	Light yellow powder
Solubility	Soluble in water (100 mg/mL)
Purity (HPLC)	≥95%

Shipping and Storage

The products are shipped with ice pack and can be stored at -20°C to -80°C for 1 year.

Instructions

1. In vitro bioluminescence detection

- 1) Dissolve D-luciferase sodium salt in sterile distilled water, prepare 30 mg/mL storage solution (100-200×), and mix well. Use immediately, or store separately at -20°C, avoid light, avoid repeated freezing and thawing.
- 2) Dilute the storage solution to the concentration of 0.15-0.3 mg/mL working solution with preheated tissue culture medium.
- 3) Cell culture medium was removed.
- 4) Before image analysis, fluorescein working solution was added into the cells and incubated at 37°C for 5-10 min, then image analysis was performed.

2. In vivo imaging analysis

- 1) Sterile DPBS (W/O Mg^{2+} , Ca^{2+}) were used to prepare 15 mg/mL fluorescein storage solution and mix well.
- 2) Use 0.2 μm filter membrane for sterilization. Use immediately, or store separately at -20°C, avoid light, avoid repeated freezing and thawing.
- 3) Intraperitoneal injection (I.P.) at the concentration of luciferin/body weight of 150 mg/kg.
- 4) Imaging analysis was performed after 10-15 min of injection (when the optical signal reached the maximum stable plateau).

Note: It is recommended that luciferase kinetic curves should be established for each animal model to determine the maximum signal detection time and signal plateau.

Matters needing attention

- 1) Firefly Luciferin and Beetle Luciferin are just names from different companies that refer to compounds (S)-2-(6-Hydroxy-2-benzothiazolyl)-2-thiazoline-4-carboxylic acid.
- 2) The injection method, animal type and body weight will all affect the signal emission, so it is recommended that luciferase kinetic curve be done for each experiment to determine the optimal signal level
Stage time and the best detection time.
- 3) If ATP is to be detected, try to avoid contamination by exogenous ATP, such as wearing gloves and using ATP-free experimental consumables during operation, and USING ATP-free sterile water during luciferase dissolution.
- 4) The product should be operated and stored away from light. The storage solution can be separated and stored at -20°C or -80°C after filtration and sterilization. If possible, the storage fluid can be filled with nitrogen or argon (prevent oxidation), can be stored at -20°C to -80°C for 1 year.
- 5) DPBS without calcium and magnesium ions should be used for the dissolution of D-luciferin sodium salt, because calcium and magnesium ions may inhibit luciferase activity, and magnesium ions may affect the oxidation of luciferin, thus affecting detection.
- 6) For your safety and health, please wear lab coat and disposable gloves to operate.