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ProductInformation

D-Luciferin

Product Number **L9504**
Storage Temperature –20 °C

Product Description

Molecular Formula: $C_{11}H_8N_2O_3S_2$
Molecular Weight: 280.3
CAS Number: 2591-17-5
λ_{max}: 268 nm, 330 nm[1]
Extinction Coefficient: E^{mM}= 7.04 (268 nm), 18.2 (330 nm)[1]
Solvent: N_2 sparged ethanol

The excitation and emission spectra for D-Luciferin have been published. The excitation is pH dependent, with a maximum of 327 nm at pH 4 and 385 nm at pH 11. The emission profile is identical at both pH's, with a maximum at 537 nm.[2] The dependence of the bioluminscence of the luceriferase-luciferin system on Zn^{2+} concentration has been published.[3]

ATP can be measured with a reagent made up of luciferin and luciferase from firefly. Discussions of extraction buffers for releasing ATP from bacteria and tissues have been published.[4,5] If D-luciferin is used for assaying the concentration of ATP in cell lysates, it is important to know if ATPases are present. These enzymes must be inactivated in the extraction process so that the ATP is not destroyed. Heat or low pH are usually used and do not affect the integrity of the ATP.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

D-luciferin is soluble in methanol (10 mg/ml). It is also soluble in DMSO (50 mg/ml).

To solubilize luciferin free base in water, bubble nitrogen through distilled water. Stir in the luciferin. It will not dissolve. Add as close to 1 equivalent as possible of $NaHCO_3$ and allow it to stir slowly at room temperature. It will take about 30 minutes to solubilize. It should be a faint yellow solution at a pH of approximately 6.5. If too much sodium bicarbonate is added, the solution will be too alkaline, and the luciferin will oxidize and form a green solution.

Storage/Stability

Solutions of D-luciferin in ice-cold 0.1 M Tris-acetate buffer, pH 7.5-7.75, prepared at 4 °C and protected from light (amber bottle in ice bath) are stable for 8-24 hours at 4 °C. In general, it is not recommended to store D-luciferin solutions frozen, although there is one unpublished report of a 100 mM stock solution being stored at –80 °C with no problems. Do not use Tris-HCl to prepare solutions of D-luciferin; if the application requires a Tris buffer, use Tris-acetate buffer instead.

References

1. White, E.H. et al., J. Am. Chem. Soc., **85**, 337 (1963).
2. Bowie, L.J., Synthesis of Firefly Luciferin and Structural Analogs. Methods in Enzymology, **57**, 23 (1978).
3. DeLuca, M., and McElroy, W.D., Purification and Properties of Firefly Luciferase. Methods in Enzymology, **57**, 5 (1978).
4. Chappelle, E.W., et al., Determination of Bacterial Content in Fluids. Methods in Enzymology, **57**, 65-72 (1978).
5. Karl, D.M., Determination of GTP, GDP, and GMP in Cell and Tissue Extracts. Methods in Enzymology, **57**, 88 (1978).

IRB/RXR 10/07

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