Creative Enzymes®

Native Photinus pyralis (firefly) Luciferase

Cat. No. NATE-0422

Lot. No. (See product label)

Introduction

Description Firefly luciferase is an enzyme that catalyzes production of light from luciferin in the presence of Mg2+-ATP and oxygen. The reaction of this enzyme with luciferin, ATP, and O2 results in the emission of light. Luciferase activity can be inhibited by general anesthetics including isoflurane and ketamine/medetomidine thereby affecting the sensitivity of bioluminescence imaging.

Applications The reaction of this enzyme with luciferin, ATP, and O2 results in the emission of light. Luciferase can be used to detect trace amounts of ATP. Firefly luciferase is also one of the most commonly utilized reporter genes for the study of gene expression. The bioluminescent reaction catalyzed by luciferase is one of the most sensitive analytical tools for measuring gene expression. < or equal to one femtomole of ATP can be detected using 0.2 µg of luciferase. This enzyme has wide range of applications in biotechnology and development of biosensors. Luciferase can be used to detect trace amounts of ATP and is one of the most commonly utilized reporter genes for the study of gene expression. The bioluminescent reaction catalyzed by luciferase is one of the most sensitive analytical tools for measuring gene expression. < or equal to one femtomole of ATP can be detected using 0.2 µg of luciferase. This enzyme has been used in a study to identify the different characteristics of reporter genes in whole-cell bacterial sensors. Luciferase from Photinus pyralis has also been used in a study to develop a novel bioluminogenic assay for α-chymotrypsin.

Synonyms Photinus-luciferin 4-monooxygenase (ATP-hydrolysing); firefly luciferase; luciferase (firefly luciferin); Photinus luciferin 4-monooxygenase (adenosine triphosphate-hydrolyzing); firefly luciferin luciferase; Photinus pyralis luciferase; EC 1.13.12.7; 61970-00-1

Product Information

Source Photinus pyralis (firefly)

Form Lyophilized powder approximately 20% protein; balance is primarily NaCl, HEPES buffer salts, and carbohydrate.

EC Number EC 1.13.12.7

CAS No. 9014-00-0

Molecular Weight mol wt 120 kDa (two subunits)

Specificity Two contaminant, ATP-consuming activities are assayed for in this product, ATPase and nucleoside diphosphokinase. These impurities are found to be < 5 nanomolar units/mg protein and < 20 nanomolar units/mg protein, respectively. Arsenate free. ATPase <5 nanomolar units/mg protein Nucleoside diphosphokinase <20 nanomolar units/mg protein > 98% (SDS-PAGE)

Unit Definition One light unit produces a biometer peak height equivalent to 0.02 µCi of 14C in PPO/POPOP cocktail. Light units measured in 50 µl assay mixture containing 5 pmol ATP and 7.5 nmol luciferin in Tris-glycine buffer, pH 7.6, at 25°C.