

7-Ethoxycoumarin-3-carbonitrile

Cat. No. CSUB-0194

Lot. No. (See product label)

Introduction

Applications This reagent is a fluorogenic substrate suitable for the continuous determination of cytochrome P450 mixed-function monooxygenases. The product of the reaction is the fluorescent compound 3-cyano-7-hydroxycoumarin (Product No. C 2737). This property has been utilized to determine the activity of CYP1A by measuring the rate of dealkylation of 3-Cyano-7-ethoxycoumarin to this fluorescent product. Fluorescence of 3-cyano-7-hydroxycoumarin occurs at neutral pH with excitation and emission at 408 and 450 nm, respectively. Fluorescent reaction product detection is at least 50-fold more sensitive than that of the product of alkyl resorufin oxidation because of greater rate of turnover of 3-Cyano-7-ethoxycoumarin. The ability to continuously monitor the enzyme reaction at pH 7 is derived from the lower pKa of the 3-cyano-7-hydroxycoumarin product compared to that for 7-ethoxycoumarin. 3-Cyano-7-ethoxycoumarin is a suitable substrate for three of the five principal cytochrome P450 drug metabolizing enzymes, CYP1A1, CYP1A2, CYP2C9, and CYP2C19. It has been used to measure cytochrome P450 mixed-function monooxygenases in rat hepatic microsomal preparations as well as in isolated rat hepatocytes. It was part of a study to examine the expression of CYP2B6 in human liver microsomes, and has been used to characterize Clara and type II cells from rat lung.

Synonyms 3-Cyano-7-ethoxycoumarin

Product Information

CAS No.	117620-77-6
Molecular Formula	C ₁₂ H ₉ N ₃ O ₃
Molecular Weight	215.20
Impurities	λ _{ex} 324 nm; λ _{em} 414 nm in DMSO
Solubility	DMSO: soluble
Substrates	Cytochrome P450