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Pyranine

Cat. No.: HY-D0023

CAS No.: 6358-69-6

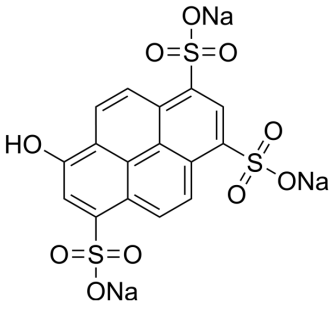
Molecular Formula: $C_{16}H_7Na_3O_{10}S_3$

Molecular Weight: 524.39

Target: Fluorescent Dye

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 : 20 mg/mL (38.14 mM; ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.9070 mL	9.5349 mL	19.0698 mL
	5 mM	0.3814 mL	1.9070 mL	3.8140 mL
	10 mM	0.1907 mL	0.9535 mL	1.9070 mL

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

In Vivo

1. Add each solvent one by one: PBS
Solubility: 25 mg/mL (47.67 mM); Clear solution; Need ultrasonic and warming

BIOLOGICAL ACTIVITY

Description

Pyranine (HPTS; Solvent Green 7) is a pH-sensitive fluorescent indicator. Pyranine acts as a class of fluorescent chemosensor for the Cu^+ ion(λex=450 nm, λem=510 nm)[1][2][3].

In Vitro

Pyranine is capable of discriminating ranges of cations from the Cu^+ ion, even in competing environment. Pyranine displays a rapid fluorescence response ($t_{1/2}$=1.66 min) towards the Cu^+ ion, and the micromolar detection limit enables the detection of the ion in environmental samples. The observed stoichiometry of complexation between Pyranine and Cu^+ is 2:1[1].
The pH-sensitive fluorescent indicator Pyranine is studied to determine its usefulness as probes for the living cornea and anterior chamber. Adequate concentrations are reached in the cornea and anterior chamber after topical administration; measurements can be made by fluorophotometry for many hours. The pH is calculated by measuring the ratio of fluorescent intensity at two excitation wavelengths, I463/I404, a measurement which is dependent on pH but independent of the concentration of the fluorophore and other variables which can alter the intensity. In the rabbit eye, Pyranine in the cornea and anterior chamber is observed to undergo easily measurable changes in fluorescent ratios associated with lid closure and contact lens wear, indicating its sensitivity to mild changes in pH[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [3]

PAAm-κC composite gels are prepared by free-radical copolymerization using 0.71 g of AAm, 0.01 g of BIS (N, N'-methylenebisacrylamide), 0.008 g of APS (ammonium persulfate) and 2 µl of TEMED (tetramethylethylenediamine) are dissolved in 5 mL of distilled water (pH 6.5) by heating. The heated mixture solution is held at 80°C. Then different amounts of κ-carrageenan (0.5, 1, 1.5, 2, 2.5 and 3 (w/v) % κC) are added. Pyranine (Py) is used in the PAAm–κC composites as a fluorescence probe, which is a derivative of pyrene possessing three SO_3^- groups, which can form bonds with positive charges on the gel. Pyranine (Py) concentration is kept constant at 4×10^{-4} M, for all experiments. The solution is stirred (200 rpm) for 15 min to achieve a homogenous sample solution. All samples are deoxygenated by bubbling nitrogen for 10 min just before the polymerization process. The drying and swelling experiments of disc-shaped PAAm–κC composite gels prepared are performed in air and in water, respectively, at various temperatures (30, 40, 50, and 60°C). A model LS-50 spectrometer equipped with a temperature controller is used for fluorescence intensity measurements, which are made at a 90° position and spectral bandwidths are kept at 5 nm. Disc-shaped gel samples are placed on the wall of a 1-cm path-length square quartz cell filled with air and/or water for the drying and swelling experiments[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Saha T, et al. In vitro sensing of Cu(+) through a green fluorescence rise of pyranine. Photochem Photobiol Sci. 2014 Oct;13(10):1427-33.

[2]. Thomas JV, et al. The fluorescent indicator pyranine is suitable for measuring stromal and cameral pH in vivo. Exp Eye Res. 1990 Mar;50(3):241-9.

[3]. Evingür GA, et al. Kinetic models for the dynamical behavior of polyacrylamide (PAAm)-κ-carrageenan (κC) composite gels. J Biol Phys. 2015 Jan;41(1):37-47.

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