Acridine Orange hydrochloride

Cat. No.: HY-101879

CAS No.: 65-61-2

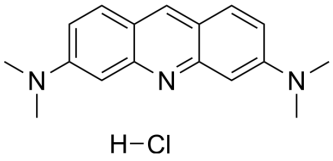
Molecular Formula: $C_{17}H_{20}ClN_3$

Molecular Weight: 301.81

Target: Parasite; DNA Stain; Fluorescent Dye

Pathway: Anti-infection; Cell Cycle/DNA Damage; Others

Storage: 4°C, protect from light, stored under nitrogen
* In solvent : -80°C, 2 years; -20°C, 1 year (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (165.67 mM; ultrasonic and heat to 60°C)
DMSO : 25 mg/mL (82.83 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	3.3133 mL	16.5667 mL	33.1334 mL
5 mM	0.6627 mL	3.3133 mL	6.6267 mL
10 mM	0.3313 mL	1.6567 mL	3.3133 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 10 mg/mL (33.13 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: 2.08 mg/mL (6.89 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (6.89 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Acridine Orange hydrochloride is a cell-penetrable nucleic acid-selective fluorescent dye. Acridine Orange hydrochloride produces orange fluorescence when it binds to ssDNA or RNA, and green fluorescence when it binds to dsDNA (Ex: 488 nM; Em: green fluorescence at 530 nm, orange fluorescence at 640 nm)[1][2][3].

In Vitro

Guidelines (Following is our recommended protocol. This protocol only provides a guideline, and should be modified according to your specific needs)[4].
1. Stain cells with Acridine Orange hydrochloride (1 μM; 20 min; 37℃).
2. Wash cells with PBS.

	3. Cells are observed by a confocal laser scanning microscopy (FV3000, Olympus). MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Acridine Orange (0.1 mg/kg, i.v., dogs) hydrochloride shows no clinical signs of toxicity and no abnormalities were seen in the blood within 30 days[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay	Two-step, pH 3.0: Aliquots (0.2 mL, containing approximately 2-5x10^5 cells) are withdrawn from cultures and are added to 0.5 mL of a solution containing: 0.1% (v/v) Triton X-100, 0.2 M sucrose, 10^{-4} M EDTA and 2x10^{-2} M citrate-phosphate buffer, at pH 3.0. Triton X-100 is included in the various procedures at the indicated pH to increase cell permeability yet maintain cellular integrity. The chelating agent EDTA is used to facilitate RNA denaturation. The cells are stained one minute later by addition of 1 mL of a solution containing 0.002% (20 μg/mL) AO, 0.1 M NaCl and 10^{-2} M citrate-phosphate buffer, pH 3.8. Cations are included in the staining mixture to ensure staining specificity. The final AO concentration is approximately 4x10^{-5} M[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Adv Funct Mater. 2023 Apr 14.
- Nat Commun. 2023 Jun 30;14(1):3877.
- Acta Pharm Sin B. 2021 Feb 11.
- Clin Transl Med. 2023 Mar;13(3):e1229.
- Cell Death Dis. 2021 Jan 13;12(1):80.

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REFERENCES

[1]. Byvaltsev VA, et al. Acridine Orange: A Review of Novel Applications for Surgical Cancer Imaging and Therapy. Front Oncol. 2019 Sep 24;9:925.

[2]. Wang Q, et al. Substrate stiffness regulates the differentiation profile and functions of osteoclasts via cytoskeletal arrangement. Cell Prolif. 2022 Jan;55(1):e13172.

[3]. McMaster GK, et al. Analysis of single- and double-stranded nucleic acids on polyacrylamide and agarosegels by using glyoxal and acridine orange. Proc Natl Acad Sci U S A. 1977 Nov;74(11):4835-8.

[4]. Traganos F, et al. Simultaneous staining of ribonucleic and deoxyribonucleic acids in unfixed cells using acridine orange in a flow cytofluorometric system. J Histochem Cytochem. 1977 Jan;25(1):46-56.

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