Acridine Orange Staining Solution

Cat. No.: A774792 | Pack size: 10 mL | Storage: Store at 2-8 °C, Protected from light

Overview

Acridine Orange (AO), a tricyclic heteroaromatic dye, is a metachromatic fluorescent dye. Capable of penetrating cell membranes, it stains nuclear DNA and RNA, and is therefore widely used for intracellular DNA and RNA detection.

AO binds to nucleic acids in two major modes:

1. Intercalative binding: AO intercalates between base pairs of double-stranded nucleic acids. This mode mainly occurs with DNA, giving green fluorescence with an emission peak at 530 nm upon excitation.

2. Electrostatic attraction: Positively-charged AO binds electrostatically to negatively-charged phosphate groups of single-stranded nucleic acids. This mode predominates for RNA binding, producing red fluorescence with an emission peak at 640 nm; weak binding yields orange-yellow or orange-red fluorescence.

Accordingly, AO exhibits green fluorescence when intercalated into double-stranded DNA, and orange-yellow or orange-red fluorescence when bound to single-stranded DNA or RNA.

Acridine Orange Staining Solution (1 mg/mL) is a stock solution and shall be diluted to an appropriate working concentration before use. AO is frequently applied in double staining together with EB. Since EB only labels dead cells with orange-yellow fluorescence, normal cells, apoptotic cells and necrotic cells can be distinguished.

Instructions for Use

1. Harvest cells. Fix cells in advance for flow cytometry analysis. Wash cells once with PBS, count and adjust cell density to 10^6 cells/mL.

2. Add adequate AO staining solution (1 mg/mL) into cell suspension to reach a final AO concentration of 8.5-17 μg/mL, mix gently.

3. Incubate for 15-20 min at room temperature in the dark. Mount aliquots onto glass slides with coverslips or proceed to flow cytometric analysis.

4. Observe under a fluorescence microscope (excitation filter: 488 nm; barrier filter: 515 nm), perform counting and image acquisition.

Precautions

1. AO staining solution (1 mg/mL) contains no permeabilizing agent and is seldom used alone.
2. AO-EB double staining enables differentiation of normal, apoptotic and necrotic cells.
3. Better results can be obtained using a refrigerated centrifuge.
4. Minimize reagent exposure to intense light during manipulation.
5. Wear laboratory coat and disposable gloves for personal safety.

Staining Results

Item	Information
Cell Type	Fluorescence Staining Characteristics
Normal cells	Evenly stained yellow-green fluorescence
Apoptotic cells	Chromatin condensation and fragmented punctate nuclei, showing densely stained green granules of variable sizes

Product Information

Item	Details
Synonyms	AO Stain Solution
CAS	494-38-2
Formula	$C_{17}H_{19}N_3$
Molecular Weight	265.35
Specifications & Purity	BioReagent, Biological Stain, for microscopy, 1.0 mg/mL
Stability And Storage	Store at 2-8°C long term (6 months). Store in the dark.
Storage	Store at 2-8°C,Protected from light
Shipped In	Wet ice. This product requires cold chain shipping. Ground and other economy services are not available.
Canonical Smiles	CN(C)C1=CC2=C(C=C1)C=C3C=CC(=CC3=N2)N(C)C
IUPAC Name	3-N,3-N,6-N,6-N-tetramethylacridine-3,6-diamine
InChIKey	DPKHZNPWBDQZCN-UHFFFAOYSA-N

Item	Details
INCHI	1S/C17H19N3/c1-19(2)14-7-5-12-9-13-6-8-15(20(3)4)11-17(13)18-16(12)10-14/h5-11H,1-4H3
Isomeric SMILES	CN(C)C1=CC2=C(C=C1)C=C3C=CC(=CC3=N2)N(C)C
WGK Germany	3
RTECS	AR7600000
Molecular Weight	265.35
Reaxy-Rn	20916
Reaxys-RN_link_address	https://www.reaxys.com/reaxys/secured/hopinto.do?context=S&query=IDE.XRN=20916&ln=
Sensitivity	Light-sensitive
Melt Point(°C)	165°C(dec.)(lit.)

Contact & Global Offices

Whether you have a technical question, need help with a quotation, or want to inquire about an order, our regional teams are ready to assist. Please contact the office for your region; for general inquiries, the North American office is the corporate primary.

NORTH AMERICAN SALES, SUPPORT & GENERAL INQUIRIES

Aladdin Scientific Corporation

14078 Meridian Parkway, Riverside, CA 92518, USA

Phone: 1-833-552-7181

Sales: sales@aladdinsci.com

Customer Service: custserv@aladdinsci.com

EU SALES, LOGISTICS & LOCALIZED SUPPORT

Aladdin Biochem Deutschland GmbH

Westring 2, 33142 Büren, Germany

Phone: +02951 9383958

Support: support.eu@aladdinsci.com

Limitations & Disclaimer

- ☐ For Research Use Only (RUO). Not for use in human or animal diagnostics, therapeutics, or in vivo applications. Not for food, cosmetic, or household use.
- ☐ This product is not a CE-marked in vitro diagnostic device under IVDR (EU) 2017/746 and is not an FDA-cleared device under 21 CFR. Use is restricted to verified businesses, institutions, and qualified professionals for research and development purposes.

- ☐ Where any kit component is classified as hazardous under CLP (EC) 1272/2008 or OSHA HCS (29 CFR 1910.1200), the product Safety Data Sheet (SDS) takes precedence over this document for handling, storage, and disposal information.
- ☐ Performance depends on sample type, sample condition, handling, and operator technique. Users are responsible for validating the kit for their specific application.
- ☐ Aladdin product labels, SDS, COA, and approved specifications take precedence over this document. If product formulation, label, SDS, storage conditions, pack size, or quality specifications change, this document would be reviewed and reissued.