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ProductInformation

Acridine orange hemi (zinc chloride) salt

Product Number **A 6014**
Store at Room Temperature

Product Description

Molecular Formula: $C_{17}H_{19}N_3 \bullet HCl \bullet 1/2\ ZnCl_2$
Molecular Weight: 369.94
CAS Number: 10127-02-3
λ_{max}: 492 nm
Fluorescence Properties
Extinction Coefficient: E^{mM} = approx. 44 (H_2O)
Excitation wavelength: 490 nm
Emission wavelength: 519 nm
Synonyms: Basic Orange 3RN, Euchrysine 3RXA, Acridine Orange NO, and Rhodulin Orange NO.[3]

Acridine Orange is a fluorescent pH indicator, orange colored at pH 8.4 and exhibiting a green fluorescence at pH 10.4.[4] It may be used to differentially stain DNA and RNA within individual unfixed cells[5] or as a viability stain.[6] The acridine orange-DNA complex is excited at 480 nm and emits at 510 nm. The acridine orange-RNA complex is excited at 440-470 nm and emits at 510 nm.[7] It also stains tumor cells selectively and retards tumor growth.[3]

When used to stain RNA and DNA on PAGE gels, bands are often visible without UV illumination, appearing orange-red. When a UV trans-illuminator is used (254 nm), double-stranded nucleotides appear as bright, green bands, and single-stranded material appears as bright, reddish-orange bands. If destaining is incomplete, the background will appear green and the red bands will appear dull, even black. The interaction of acridine orange with nucleic acids is complex, and the fluorescence emission spectrum is affected not only by gross secondary structure of the polynucleotides, but also by the concentration of acridine orange, pH, presence of organic solvents, temperature, and ionic strength. At very high polynucleotide-dye ratios, most molecules fluoresce green. If the gels contain 6 M urea at pH 3.5, all bands appear green, regardless of structure.[2]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water (6 mg/ml), in ethanol (2 mg/ml), and in 2-methoxyethanol (EGME, 4 mg/ml).[1] At 1 mg/mL in water, it forms a clear, dark orange to amber solution.

Storage/Stability

Stock solutions should be stored in the dark at 4 ºC.[2]

References

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4. CRC Handbook of Chemistry & Physics, 74th ed., Lide, D. R., ed., CRC Press (Boca Raton, FL: 1993), pp. 8-19.
5. 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., **25(1)**, 46-56 (1977).
6. Geng, Y. J., et al., Apoptosis of vascular smooth muscle cells induced by in vitro stimulation with interferon-gamma, tumor necrosis factor-alpha, and interleukin-1 beta. Arterioscler. Thromb. Vasc. Biol., **16(1)**, 19-27 (1996).
7. Flow Cytometry: First Principles, Givan, A. L., Wiley-Liss (New York, NY: 1992), p. 64.

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