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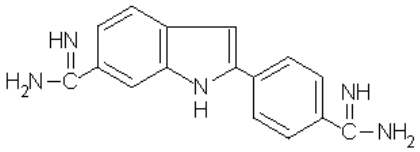
Product Information

DAPI
4',6-Diamidino-2-phenylindole

Catalog Numbers **D9542, D8417 and D9564**



Spectral data:
DAPI alone, Ex = 340 nm, Em = 488 nm
E_{mM} (263 nm) = 30 (water)[1]
DAPI-DNA complex, Ex = 364 nm, Em = 454 nm
(100 mM NaCl, 10 mM EDTA, 10 mM
Tris, pH 7)[2]

4',6-Diamidino-2-phenylindole dihydrochloride
D 9542, D8417 (cell culture tested)
Storage temperature 2-8 °C
CAS RN: 28718-90-3
Molecular formula: $C_{16}H_{15}N_5 \bullet 2$ HCL
Formula weight: 350.25

DAPI, dilactate
Catalog Number **D9564**
Storage temperature: 2-8 °C
Molecular formula: $C_{16}H_{15}N_5 \bullet \cdot 2\ C_3H_6O_3$
Formula weight: 457.48

Product Description
DAPI is a blue fluorescent nucleic acid stain that preferentially stains double-stranded DNA (dsDNA). It attaches to AT clusters in the DNA minor groove having one molecule of dye for each 3 base-pairs.[2] Binding of DAPI to dsDNA produces an approximate 20-fold fluorescence enhancement. The fluorescence is directly proportional to the amount of DNA present, with emission maximum at ~460nm.

Although cations (divalent or heavy metal) do substantially quench its (blue) fluorescence, the fluorescence is unchanged over a pH range 4-11. The complex is stable for hours at room temperature and is not photo-dissociated during assay.[3]

DAPI also binds to RNA via a somewhat different mechanism, believed to involve AU-specific intercalation[4] with an emission maximum at ~500 nm. The quantum yield of the DAPI/RNA complex is only about 20% as high as the yield of the DAPI/dsDNA complex.

For axonal trace studies, DAPI was mixed with primuline (approximately 0.5 L of 2.5% DAPI, 10% primuline (w/v) in distilled water) and injected into rat brain. This mixture fluoresces blue with gold granules.[2]

DAPI can be used as a vital dye to stain mature pollen grains (0.5 μg/ml). [5]

DAPI is useful in detection of mycoplasmas.[6,7,8] In uninfected cell culture, DAPI is rapidly taken up into cellular DNA, yielding highly fluorescent nuclei with no detectable cytoplasmic fluorescence. Cultured cells are examined immediately after incubation with DAPI at 0.1 μg/mL in PBS at 30 °C for 15-30 minutes.[7] If cells are contaminated with mycoplasmas, characteristic discrete fluorescent foci are readily detected in cytoplasm and on cell surfaces.[7] The presence of these foci is a convenient diagnostic test for contamination.

DAPI also has a role in rapid monitoring of microbial contamination,[9] in chromosomal banding technique[10] and in detection of apoptotic cells.[11, 12]

DAPI was used in fluorescence microscopy to track the DisA (DNA integritiy scanning protein) movement on *Bacillus subtilis* DNA. Its presence did not affect DisA movement.[13]

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation instructions
Soluble in water at 20 mg/ml (heat may be required) yielding a yellow clear solution. Subsequent dilutions can be made with water or McIlvain's pH 4 buffer. DAPI readily dissolves in water, but does not dissolve directly into PBS even with heat and sonication.

Storage/Stability:
D9542
Store dessicated and protected from light at 2-8 °C. Under these conditions, the products are stable for 3 years.

Solutions stored in the dark at room temperature have been stable for 2-3 weeks, but solutions exposed to light for the same time period have shown considerable degradation.[10] At 1 mg/mL, the solutions are stable in the dark at 2-8 °C for several weeks. For long-term storage, the solutions can be aliquoted and stored at −20 °C.

References:

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