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ProductInformation

DL-7-Azatryptophan hydrate

Product Number **A 1632**
Storage Temperature -0 °C

Product Description
Molecular Formula: $C_{10}H_{11}N_3O_2$
Molecular Weight: 205.2
CAS Number: 7303-50-6
Melting point: 262-264 °C[1]
Extinction coefficient:
E^{mM} = 1.205 (310 nm), 5.080 (280 nm)[2]
Fluorescent properties:
Excitation wavelength = 310 nm
Emission wavelength = 402 nm

This product is a fluorescence probe for protein structure, function, and dynamics. The fluorescence emission behavior in reverse micelles of dioctyl sulfosuccinate in n-heptane, containing varying amounts of added water or deuterium oxide, has been reported. When the water/surfactant molar ratio increased from 0.5 to 50, the emission maximum increased from 370 nm to 390 nm. This membrane mimetic model system simulates conditions corresponding to varying degrees of hydration present at membrane interfaces.[3]

The tryptophan analogs 5-hydroxtryptophan and 7-azatryptophan may be biosynthetically incorporated into bacterial proteins and are useful intrinsic fluorescence probes of protein structure, function, and dynamics. The utility of the probes for characterizing tryptophanyl-tRNA synthetase has been studied.[2] The preparation of a biotin-7-azatryptophan adduct has been reported for the purpose of demonstrating the differences spectroscopically between 7-azatryptophan and tryptophan and to investigate the mobility of biotin-7-azatryptophan complexed with egg-white avidin.[4] The preparation of 5'-phosphopyridoxyl-D,L-7-azatryptophan, which has distinct absorption and emission spectra properties, has been used as an intrinsic probe in spectral studies of protein dynamics, since it will bind in the enzyme active site.[5]

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

Preparation Instructions
This material is soluble in 1 M HCl (50 mg/ml), with heat as needed, yielding a clear to slightly hazy, colorless to faint yellow solution.

References
1. Robinson, M. M., and Robison, B. L., 7-Azaindole. I. Synthesis and conversion to 7-azatryptophan and other derivatives. J. Am. Chem. Soc., **77**, 457-460 (1955).
2. Hogue, C. W., and Szabo, A. G., Characterization of aminoacyl-adenylates in *B. subtilis* tryptophanyl-tRNA synthetase, by the fluorescence of tryptophan analogs 5-hydroxytryptophan and 7-azatryptophan. Biophys. Chem., **48(2)**, 159-169 (1993).
3. Guharay, J., and Sengupta, P. K., Characterization of the fluorescence emission properties of 7-azatryptophan in reverse micellar environments. Biochem. Biophys. Res. Comm., **219(2)**, 388-392 (1996).
4. Rich, R. L., et al., Using 7-azatryptophan to probe small molecule-protein interactions on the picosecond time scale: the complex of avidin and biotinylated 7-azatryptophan. J. Am. Chem. Soc., **117**, 733-739 (1995).
5. Smirnov, A. V., et al., Synthesis and spectral characterization of 5'-phosphopyridoxyl-D, L-7-azatryptophan, a photophysical probe of protein structure and dynamics. Biochem. Biophys. Res. Commun., **198(3)**, 1007-1011 (1994).

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