

Product Data Sheet

Product Name: Thioflavin T (Basic Yellow 1)

Cat. No.: GC30031

Chemical Properties

Cas. No. 2390-54-7

SMILES CC1=CC=C2[N+](C)=C(C3=CC=C(N(C)C)C=C3)SC2=C1.[Cl-]

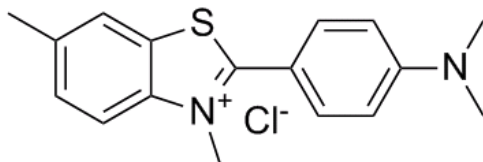
Formula $C_{17}H_{19}ClN_2S$ M.Wt 318.86

Solubility DMSO : 22.5 mg/mL (70.56 mM); Water : 2mg/mL (39.20 mM) Storage Store at RT, protect from light

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

This plan is only a guide, please modify it according to your specific needs.

1. Prepare staining solution:

(1) Protein staining: Dissolve Thioflavine T in 1xPBS to obtain a dye working solution with a concentration of 1 mM;

(2) Tissue section stain: Dissolve Thioflavine T in 50% ethanol to obtain a dye working solution with a concentration of 0.05 w/v%.

Caution: Product has not been fully validated for medical applications. For research use only.

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Product Data Sheet

2. Protein staining:

- (1) Dilute Thioflavine T in PBS to a final concentration of 25 μ M in each well of a black 96-well plate (volume per well = 100 μ L).
- (2) Prepare in advance by thawing α -synuclein aliquots at room temperature.
- (3) Add 10 μ M preformed fibrils or 100 μ M monomers (or both) to the appropriate wells. Mix the contents of the wells by pipetting up and down.

Note: The above concentrations are for reference only and preliminary experimental optimization is required in actual applications.

- (4) Seal the plate and place in a shaking incubator (600 rpm) at 37 °C.
- (5) Fluorescence values were measured regularly over 1 to 72 hours using a fluorescence microplate reader at excitation and emission wavelengths of 450/482 nm, respectively.

3. Tissue section stain:

- (1) Thioflavine T is suitable for staining paraffin sections;
- (2) Incubate the treated sections with ThT in the dark for 8 minutes. Please find the optimal staining time based on your specific experimental needs.
- (3) Wash the sections twice in 80% ethanol and H₂O for 10 seconds each.
- (4) Use antifade mounting medium without DAPI for sealing and observe under a fluorescence microscope at excitation and emission wavelengths of 450/482 nm, respectively.

Notes:

1. All fluorescent dyes have quenching problems. Please try to avoid light to slow down fluorescence quenching;
2. For your safety and health, please wear a lab coat and disposable gloves when operating.

Background

Thioflavin T (Basic Yellow 1) is a cell-permeable benzothiazole dye that exhibits enhanced fluorescence (Ex/Em : 450/482 nm) upon binding to amyloid fibrils. Useful in monitoring stacked β -sheet aggregates, Thioflavin T has also been used in histology and for protein characterization.^[1]

In aqueous solution, Thioflavin T exists in the form of micelles, and its concentration is usually used to monitor fibrils by fluorescence determination (~10-20 μ M). The specific conductivity change was measured at different concentrations of Thioflavin T, and the critical micelle concentration was calculated to be 4.0 $\pm$ 0.5 μ M. Thioflavin T micelles were disrupted at low pH, as observed by atomic force microscopy, and the fluorescence enhancement of Thioflavin T upon binding to amyloid fibrils

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also decreased several-fold when the pH dropped below 3^[2].

References :

- [1].Alimohammadi-Kamalabadi M, Eshraghian M, Zarindast MR, Aliaghaei A, Pishva H. Effect of creatine supplementation on cognitive performance and apoptosis in a rat model of amyloid-beta-induced Alzheimer's disease. Iran J Basic Med Sci. 2016 Nov;19(11):1159-1165.
- [2].Khurana R, Coleman C, Ionescu-Zanetti C, Carter SA, Krishna V, Grover RK, Roy R, Singh S. Mechanism of thioflavin T binding to amyloid fibrils. J Struct Biol. 2005 Sep;151(3):229-38.

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