# TMA-DPH

**Cat. No.:** HY-D0986

**CAS No.:** 115534-33-3

**Molecular Formula:** $C_{28}H_{31}NO_3S$

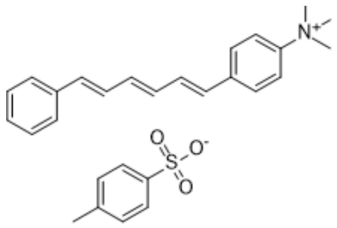
**Molecular Weight:** 461.62

**Target:** Fluorescent Dye

**Pathway:** Others

**Storage:** -20°C, sealed storage, away from moisture and light

* The compound is unstable in solutions, freshly prepared is recommended.



## SOLVENT & SOLUBILITY

**In Vitro**

DMSO : 10 mg/mL (21.66 mM; ultrasonic and warming and heat to 60°C)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 2.1663 mL | 10.8314 mL | 21.6628 mL |
| | 5 mM | 0.4333 mL | 2.1663 mL | 4.3326 mL |
| | 10 mM | 0.2166 mL | 1.0831 mL | 2.1663 mL |

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 1 mg/mL (2.17 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 1 mg/mL (2.17 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: 1 mg/mL (2.17 mM); Suspended solution; Need ultrasonic

## BIOLOGICAL ACTIVITY

**Description**

TMA-DPH is a hydrophobic fluorescent membrane probe (Ex=355 nm; Em=430 nm). TMA-DPH is able to anchor on the cell surface and localize to different regions of the phospholipid bilayer. By analyzing the fluorescence polarization values of TMA-DPH in the plasma membrane and membrane substructures, the fluidity of the cell membrane can be determined[1][2][3].

**In Vitro**

Upon contact with cells, TMA-DPH is immediately integrated into the plasma membrane and subsequently concentrated in lysosomes and highly acidic late endosomes[1].
The TMA-DPH fluorescence lifetime, which remained constant at concentrations below 2 μM, was 6.2 ± 0.2 ns. When the concentration is higher than 2 μM, there is a significant decrease with increasing concentration; when the concentration

exceeds 5 μM, the rate of decrease decreases. TMA-DPH fluorescence anisotropy shows a similar evolution to the fluorescence lifetime. First, it remains constant at 0.283±0.003 at concentrations below 2 μM. There is a significant decrease with increasing concentration when the concentration is higher than 2 μM; then it rapidly decreases to 0.270±0.003 at 5 μM, and the subsequent decrease rate decreases significantly[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

**Cell Assay** [1]

L929 cells in 2 mL DM10F are allowed to adhere on microscope slide flasks. For the observation of plasma membrane labeling, cells are incubated for a short time (10 s) at room temperature with TMA-DPH $2\times10^{-6}$ M in PBS or in DM10F from a $4\times10^{-3}$ M stock solution in dimethylformamide. The unwashed slide is then transferred to the microscope and observed. For the labeling of internalized membrane, the cells are incubated in slide flasks at 37°C, with TMA-DPH $2\times10^{-6}$ M in DM10F for the desired time, and then washed by gently shaking the slide in PBS for a few seconds[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Stem Cell Res Ther. 2024 Jan 8;15(1):12.
- Ecotoxicol Environ Saf. 2022 Dec 9;249:114375.
- Ecotoxicol Environ Saf. 2021 Dec 20;227:112885.
- Biotechnol Biofuels. 2019 Mar 19;12:59.
- Food Funct. 2020 Jan 29;11(1):700-710.

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## REFERENCES

[1]. Benedetti A, et al. Plasma membrane fluidity in isolated rat hepatocytes: comparative study using DPH and TMA-DPH as fluorescent probes. J Gastroenterol Hepatol. 1989 May-Jun;4(3):221-7.

[2]. Illinger D, et al. The kinetic aspects of intracellular fluorescence labeling with TMA-DPH support the maturation model for endocytosis in L929 cells. J Cell Biol. 1994 May;125(4):783-94.

[3]. Illinger D, et al. A comparison of the fluorescence properties of TMA-DPH as a probe for plasma membrane and for endocytic membrane. Biochim Biophys Acta. 1995 Oct 4;1239(1):58-66.



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