

Product Data Sheet

Product Name: 1,6-Diphenyl-1,3,5-hexatriene

Cat. No.: GC45306

Chemical Properties

Cas. No. 1720-32-7

SMILES C1(/C=C/C=C/C=C/C2=CC=CC=C2)=CC=CC=C1

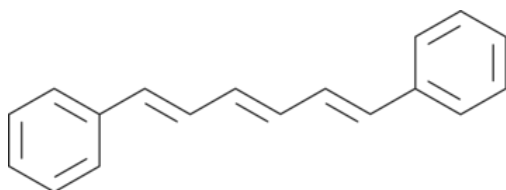
Formula $C_{18}H_{16}$ M.Wt 232.3

Solubility DMF: 0.2mg/mL, DMF:PBS (pH 7.2): 0.5mg/mL Storage Store at -20°C

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

Method for Using the 1,6-Diphenyl-1,3,5-hexatriene Fluorescent Probe in Membrane Studies ^[1]

This protocol is adapted from research data and provided for reference only. Adjustments may be necessary based on specific experimental requirements.

1. Reagent Preparation: Dissolve 1,6-Diphenyl-1,3,5-hexatriene in dimethylformamide (DMF) to prepare a stock solution; dissolve POPC (34.6mM) and ITZ (9.5mM) separately in chloroform to prepare stock solutions.
2. Liposome Preparation (Small Unilamellar Vesicles, SUVs): Mix appropriate volumes of POPC and ITZ chloroform stock solutions in a volumetric flask, evaporate the solvent under a stream of nitrogen to form a dry lipid film. Hydrate with phosphate buffer (final POPC concentration of 2.5mg/mL), and sonicate to obtain SUVs with a particle size of 30-200nm.
3. 1,6-Diphenyl-1,3,5-hexatriene Labeling: Add the DPH stock solution to the liposome sample to achieve a final 1,6-Diphenyl-1,3,5-hexatriene concentration of 102nM, and incubate in the dark for 1

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hour.

4. Steady-State Fluorescence Anisotropy Measurement: Use a spectrofluorometer, set the excitation wavelength $\lambda_{exc}=360\text{nm}$ and emission wavelength $\lambda_{em}=430\text{nm}$, and measure the fluorescence intensities of vertical and horizontal polarizations.

Precautions:

- (1) The fluorescence lifetime of 1,6-Diphenyl-1,3,5-hexatriene is sensitive to the polarity (dielectric constant) of the membrane environment; the lifetime value increases in more ordered and hydrophobic membrane environments.
- (2) For your safety and health, please wear a lab coat and disposable gloves during operation.

References:

[1] Poojari C, Wilkosz N, Lira RB, et al. Behavior of the DPH fluorescence probe in membranes perturbed by drugs. Chem Phys Lipids. 2019 Sep;223:104784.

Background

1,6-Diphenyl-1,3,5-hexatriene is a fluorescent probe for lipid monolayers and bilayer membranes (with maximum excitation and emission wavelengths of 360/430nm). 1,6-Diphenyl-1,3,5-hexatriene can be localized in the hydrocarbon region of membrane lipids, exhibiting almost no fluorescence in water, but its fluorescence increases significantly upon membrane insertion, thereby enabling the detection of membrane viscosity, polarity, and lipid order. 1,6-Diphenyl-1,3,5-hexatriene can be used in studies of membrane fluidity, lipid droplet fluorescence detection, determination of surfactant critical micelle concentration, and reporting of bacterial spore membrane fluidity, among other related research^[1-4].

References:

- [1] He W. DPH Probe Method for Liposome-Membrane Fluidity Determination. Methods Mol Biol. 2023;2622:241-244.
- [2] Parasassi T, Sapora O, Giusti AM, et al. Alterations in erythrocyte membrane lipids induced by low doses of ionizing radiation as revealed by 1,6-diphenyl-1,3,5-hexatriene fluorescence lifetime. Int J Radiat Biol. 1991 Jan;59(1):59-69.
- [3] Bouchy M, Donner M, André JC. Evolution of fluorescence polarization of 1,6-diphenyl-1,3,5-hexatriene (DPH) during the labelling of living cells. Exp Cell Res. 1981 May;133(1):39-46.
- [4] Ibrahim H, Jurcic K, Wang JS, et al. 1,6-Diphenyl-1,3,5-hexatriene (DPH) as a Novel Matrix for MALDI MS Imaging of Fatty Acids, Phospholipids, and Sulfatides in Brain Tissues. Anal Chem. 2017

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Dec 5;89(23):12828-12836.

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