Data Sheet (Cat.No.TYD-00504)

TargetMol

Zinpyr-1

Chemical Properties

CAS No. : 288574-78-7

Formula: C46H36Cl2N6O5

Molecular Weight: 823.72

Storage: Keep away from direct sunlight,Store under nitrogen
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Zinpyr-1 is a zinc ion-responsive fluorescent indicator and cell membrane-permeable metal-binding probe. It binds to Mn^{2+} to form a complex with enhanced fluorescence signals. Moreover, Zinpyr-1 specifically binds to free zinc ions in serum, enabling quantitative determination of free zinc ion concentration. In plant systems, the fluorescence signal of Zinpyr-1 reflects the relative zinc ion level in root cells and is mainly localized in specific regions of root cells. It can be applied to the screening of plant zinc transporter mutants and research on zinc homeostasis regulation.
Targets(IC50)	Others
In vivo	Methods: A complex was constructed using Zinpyr-1 and Mn^{2+}, and its fluorescence response characteristics to Zn^{2+} were detected under different pH conditions. Cell experiments were performed to evaluate its membrane permeability and cytotoxicity, and its capability for zinc ion detection and imaging was verified in serum system and Arabidopsis thaliana seedling model. Results: 1.Zinpyr-1 (10 μM, pH 6-8) could form a 1:2 complex with Mn^{2+}. When used for Zn^{2+} detection, the fluorescence dynamic range was 25 times higher than that of the free ligand (106 at pH 7.0).It still maintained a high dynamic range at pH 6.0 and 8.0, and exhibited significantly better selectivity for Zn^{2+} than common monovalent and divalent cations in vivo. 2.The complex formed by Zinpyr-1 (10 μM) and Mn^{2+} possessed cell membrane permeability and showed no cytotoxicity to HeLa cells. It had extremely low background fluorescence and was remarkably activated after binding to Zn^{2+}, which was suitable for zinc ion imaging in living cells. 3.The complex formed by Zinpyr-1 (0.1 mM) and Mn^{2+} could be used as a zinc-responsive MRI contrast agent [1]. 4.Zinpyr-1 could stably produce the minimum fluorescence (Fmin) and maximum fluorescence (Fmax) for the quantification of free zinc in serum, with a maximum excitation wavelength of 507 nm and a maximum emission wavelength of 526 nm, enabling reliable quantification of serum free zinc [2]. 5.Zinpyr-1 (5-20 μM, 15 min-3 h) could serve as a fluorescent probe for relative zinc levels in root cells of Arabidopsis thaliana seedlings, and the fluorescence intensity was positively correlated with intracellular zinc concentration [3].

Solubility Information

Solubility	DMSO: 16.00 mg/mL (19.42 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.214 mL	6.070 mL	12.140 mL
5 mM	0.2428 mL	1.214 mL	2.428 mL
10 mM	0.1214 mL	0.607 mL	1.214 mL
50 mM	0.0243 mL	0.1214 mL	0.2428 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

You Y, et al. Manganese displacement from Zinpyr-1 allows zinc detection by fluorescence microscopy and magnetic resonance imaging. Chem Commun (Camb). 2010;46(23):4139-4141.
Alker W, et al. A Zinpyr-1-based Fluorimetric Microassay for Free Zinc in Human Serum. Int J Mol Sci. 2019;20(16): 4006. Published 2019 Aug 16.
Sinclair SA, et al. The use of the zinc-fluorophore, Zinpyr-1, in the study of zinc homeostasis in Arabidopsis roots. New Phytol. 2007;174(1):39-45.