Data Sheet (Cat.No.T19033)

TargetMol

Nile Red

Chemical Properties

CAS No. : 7385-67-3

Formula: C20H18N2O2

Molecular Weight: 318.369

Storage: Keep away from direct sunlight
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	Nile Red ((Nile Blue A oxazone)) is a lipophilic, environment-sensitive fluorescent dye. Highly hydrophobic, with fluorescence significantly enhanced in lipid-rich environments. Commonly used for specific staining of intracellular lipid droplets, with excitation/emission wavelengths of 559/635 nm.
Targets(IC50)	Others
In vitro	**Methods**: Microplastics were labeled using Nile Red staining, incubated in 0.01 mg/mL ethanol solution for 5 minutes, and combined with micro-Raman spectroscopy detection. **Results**: After staining, characteristic peaks of most plastics remained undisturbed except for expanded polystyrene, enabling successful identification of polyethylene, polypropylene, and others; fluorescent particles in environmental samples excited by 442 nm laser were confirmed to be mostly plastic.[1]
In vivo	**Methods**: Nile Red was physically adsorbed onto the PCN-222@HA carrier and then mixed with feed to feed Spodoptera litura larvae. After 24 hours, frozen sections were observed. **Results**: Strong red fluorescence appeared in the bodies of insects in the carrier group, confirming that the carrier could be ingested by insects and release the tracer. [2]
Cell Research	Instructions 1. Dissolve and preparation Nile Red can dissolve in DMSO, ethanol or acetone. The dissolution concentration is usually in the range of 0.2-10 μM, and the specific concentration should be optimized according to the needs of the experiment. 2. Cell staining 1. Staining procedure: 1) During cell culture, Nile Red can be used to label lipid droplets and neutral lipids in cells. The dissolved Nile Red solution can be added directly to the cell culture medium. 2) The commonly used staining concentration is 1-5 μM and the staining time is 10-30 minutes. During the staining process, cells are labeled with dyes, especially lipid droplets and fatty membranes. 3) After staining, you can use fluorescence microscopy or flow cytometry to observe. Nile Red produces a strong fluorescent signal on lipid droplets. 2. Fluorescence characteristics: Nile Red produces strong red fluorescence (Em ~ 620

Cell Research	nm) in lipid environments, while it manifests as golden fluorescence (Em ~ 540 nm) in low polarity environments. 2. Observation of lipid droplets and liposomes Nile Red can be used to study the formation and size of lipid droplets in cells. In flow cytometry, the number and size of lipid droplets can be quantitatively analyzed by observing the fluorescence intensity of Nile Red-labeled cells. Under a fluorescence microscope, the distribution and dynamic changes of lipid droplets can be observed with high resolution. 3. Fluorescence detection and quantification: Nile Red can also be used for quantitative analysis of lipids. By measuring its fluorescence intensity in the lipid solution, the amount of lipid in the sample can be inferred. Since the fluorescence intensity of Nile Red is related to the number and structure of lipids, it is a common tool for analyzing lipid content and evaluating fatty acid metabolism. 4. Co-staining experiment: Nile Red can be used in combination with other fluorescent dyes to label different types of lipids simultaneously, or to co-stain with other organelle markers, helping researchers to gain insight into the relationship between lipids and other cellular components. Notes: 1.Nile Red should be stored in a cool and dry environment to avoid strong light to prevent fluorescence attenuation. 2. The solution should be stored at -20°C to avoid repeated freeze-thawing. The above information is based on published literature. Experimental procedures should be appropriately modified to meet specific research demands.

Solubility Information

Solubility	DMSO: 1.43 mg/mL (4.49 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.141 mL	15.705 mL	31.410 mL
5 mM	0.6282 mL	3.141 mL	6.282 mL
10 mM	0.3141 mL	1.5705 mL	3.141 mL
50 mM	0.0628 mL	0.3141 mL	0.6282 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

Prata, Joana C et al. Selection of microplastics by Nile Red staining increases environmental sample throughput by micro-Raman spectroscopy. The Science of the total environment vol. 783 (2021): 146979.
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