

Mag-Fluo-4 AM (Mg^{2+}/Ca^{2+} fluorescent probe)

Cat. No.: M648123 | Pack size: 50 μ g | Storage: Protected from light; -20°C

Overview

Cell-permeable Mag-Fluo-4 AM is an analog of Fluo-4 AM. Its dissociation constant (K_d) for magnesium ions is 4.7 mM and 22 μ M for calcium ions. This property enables it to serve as both an intracellular magnesium ion indicator and a low-affinity calcium ion indicator. This low-affinity fluorescent calcium indicator has been successfully applied to accurately track the kinetics of spatially-averaged free calcium transients in skeletal muscle, providing reliable kinetic data for such calcium signals.

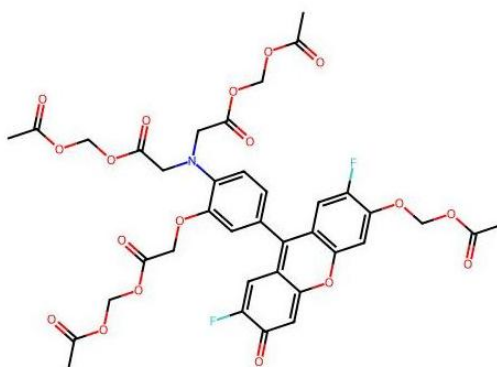


Figure 1. Chemical structure of Mag-Fluo-4 AM.

Specifications

Attribute	Value
Specifications & Purity	≥95%
CAS Number	1097709-31-3
Biochemical and Physiological Mechanisms	Mag-Fluo-4 AM is a fluorescent Ca^{2+} chelator, with high affinity for calcium. Mag-Fluo-4 AM can specifically identify intracellular calcium ions, with high sensitivity and low cytotoxicity; the AM acetylmethyl ester can enter cells well.

Attribute	Value
Form	Oil
Purity	≥95%

Product Specifications

1. Ex (nm): 495 nm.
2. Em (nm): 528 nm.
3. Molecular Weight: 817.65.
4. Solvent: DMSO.

Application Range

Used as intracellular magnesium ion indicator and low-affinity calcium ion indicator.

Example Experimental Protocol

1. Stock Solution Preparation: Aliquot all unused stock solutions into single-use portions, store at -20°C after preparation and avoid repeated freeze-thaw cycles.
2. Mag-Fluo-4 AM Stock Solution: Prepare 2-5 mM Mag-Fluo-4 AM stock solution with high-purity anhydrous DMSO.

Working Solution Preparation

Mag-Fluo-4 AM Working Solution

1. On the day of experiment, dissolve Mag-Fluo-4 AM in DMSO or thaw the stock solution to room temperature.
2. Prepare 2-20 μ M Mag-Fluo-4 AM working solution with suitable buffers (e.g. Hanks' buffer, Hepes buffer) containing 0.04% Pluronic® F-127. A final concentration of 4-5 μ M is recommended for most cell lines; optimize the concentration according to actual experimental conditions.

Notes

1. Pluronic® F-127 can enhance the water solubility of Mag-Fluo-4 AM.
2. For cells expressing organic anion transporters, add 1-2 mM probenecid (final well concentration: 0.5-1 mM) into the working solution to reduce probe leakage.

Operating Procedures

1. Culture cells in growth medium overnight.

2. Add 1× Mag-Fluo-4 AM working solution to cell plates on the next day.

Note: Replace the medium with fresh HHBS buffer before loading if the test compound interacts with serum.

3. Incubation condition: Incubate for 30-60 minutes in a 37°C cell incubator.

Note: Prolong the incubation time to more than 1 hour for certain cell lines to strengthen fluorescence signals.

4. Discard the working solution and replace it with HHBS buffer or buffer containing anion transport inhibitors (e.g. 1 mM probenecid).

5. After adding stimulants, detect fluorescence signals immediately with the following instruments:

Fluorescence microscope equipped with FITC filter sets.

Fluorescence microplate reader (e.g. FDSS, FLIPR, FlexStation).

Detection parameters: Ex/Em = 490/525 nm, Cut-off wavelength: 515 nm.

Storage and Shipping

Item	Description
Storage Conditions	Protected from light; store at -20°C
Shipped In	Ice chest + ice pads
Cold-chain note	This product requires cold chain shipping. Ground and other economy services are not available.

Recommended Applications

Fluorescent dye/probe applications for intracellular calcium ion identification; observation by fluorescence microscopy or flow cytometry.

Contact / Global Offices

For ordering, technical support, certificates, SDS, and documentation requests, please contact the appropriate Aladdin office below.

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