

Product Data Sheet

Product Name: Streptavidin-FITC

Cat. No.: GC19886

Chemical Properties

Cas. No.

Formula

M.Wt

Solubility 1:20 to 1:50 dilution with PBS containing 10% normal goat serum. Working dilution for specific application should be determined by individual investigator to obtain the best conditions.

Storage Store at 2-8°C. protect from light. Do not freeze.

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

This plan only provides a guide, please modify it to meet your specific needs.

1. Solution preparation

Caution: Product has not been fully validated for medical applications. For research use only.

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(1) Stock solution: This product is provided in the form of a solution with a concentration of 0.5 mg/ml.

Note: Please store at 2-8°C, protect from light, and avoid repeated freezing and thawing.

(2) Working solution: Before the formal experiment, dilute it with PBS containing 10% normal goat serum at a ratio of 1:20 to 1:50.

Note: Please adjust the working concentration of a specific application according to the actual situation or refer to the literature to set the gradient concentration yourself to obtain the best conditions. The working fluid must be prepared and used immediately.

2. Use Streptavidin-FITC combined with flow cytometry to detect cell surface lectin binding ^[1] (from the literature, for reference only)

(1) Cell treatment: Transfer the cells to a 96-well plate, add 1 µg of biotinylated lectin to each well, and incubate for 1 hour.

(2) Wash cells: Wash cells three times with PBS.

(3) Labeling: Incubate with Streptavidin-FITC working solution for 30 minutes.

(4) Fluorescence detection: Use FACSCalibur flow cytometer to measure the lectin binding profile of cells. The excitation and emission wavelengths were set to 488 nm and 520 nm, respectively.

3. Steps to label cells using Streptavidin-FITC ^[2] (from the literature, for reference only)

(1) Cell treatment: Incubate cells with PBS buffer containing 1% paraformaldehyde and 0.1% Triton X-100 at 4°C for 30 minutes.

(2) Wash cells: Wash cells twice with PBS buffer.

(3) Biotin treatment: Incubate cells with biotinylated peptides at 4°C for 1 hour.

(4) Labeling: Incubate cells with Streptavidin-FITC working solution (10 µg/ml) at 4°C for 30 minutes, then wash twice (repeat step 2).

(5) PI treatment: Immerse cells in PBS buffer supplemented with 1 µg/ml propidium iodide (PI) to observe cells at 25°C.

(6) Fluorescence detection: Observe cells using a fluorescence microscope. The excitation and emission wavelengths used for the FITC channel are 488 and 525 nm, respectively.

Note: This protocol provides guidance for labeling cells with Streptavidin-FITC and subsequent fluorescence measurements. Adjustments can be made based on other literature and specific experimental requirements.

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[1] Thomas M, Pierson M, Uprety T, et al. Comparison of porcine airway and intestinal epithelial cell lines for the susceptibility and expression of pattern recognition receptors upon influenza virus infection[J]. Viruses, 2018, 10(6): 312.

[2] Smith T E, Pond C D, Pierce E, et al. Accessing chemical diversity from the uncultivated symbionts of small marine animals[J]. Nature chemical biology, 2018, 14(2): 179-185.

Background

Streptavidin-FITC has a high affinity for biotin, with a K_d value of approximately 10^{-15} mol/L^[1]. Streptavidin-FITC is used to detect biotinylated antibodies, proteins, nucleic acids or other molecules, and is suitable for studies such as immunohistochemistry (IHC), immunocytochemistry (ICC), immunofluorescence (IF) and in situ hybridization (ISH), and can be observed by fluorescence microscopy or flow cytometry^[2]. Streptavidin is a 52,800 Dalton tetrameric protein that has an extremely high affinity for biotin. One molecule of streptavidin can bind to four molecules of biotin, and this binding is irreversible^[3]. The maximum excitation/emission wavelengths of Streptavidin-FITC are 488/520 nm, respectively^[4].

References:

[1] Hu S, Yang H, Cai R, et al. Biotin induced fluorescence enhancement in resonance energy transfer and application for bioassay[J]. Talanta, 2009, 80(2): 454-458.

[2] Gmür R, Lüthi-Schaller H. A combined immunofluorescence and fluorescent in situ hybridization assay for single cell analyses of dental plaque microorganisms[J]. Journal of microbiological methods, 2007, 69(2): 402-405.

[3] Jeney S, Mor F, Koszali R, et al. Monitoring ligand–receptor interactions by photonic force microscopy[J]. Nanotechnology, 2010, 21(25): 255102.

[4] Wu D, Zhou X, Zhang J, et al. A FAPI-conjugated FITC fluorescence probe for targeted cancer imaging[J]. New Journal of Chemistry, 2024, 48(14): 6314-6321.

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