

Product Data Sheet

Product Name: BSA-FITC

Cat. No.: GC26406

Chemical Properties

Cas. No.

Formula

M.Wt

Solubility

Storage Store at -20°C, at least one year
(Avoid repeated freeze/thaw cycles)

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

BSA-FITC Method for Assessing Blood-Brain Barrier Permeability and Endothelial Cell Endocytosis^[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: Prepare a 50µg/mL working solution of BSA-FITC using Hank's Balanced Salt Solution.

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

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2. BSA-FITC Method for Determining Blood-Brain Barrier Permeability

(1) In Vitro BBB Model Construction: Seed bEnd.3 cells at a density of 50,000 cells/cm² onto the upper surface of polyester Transwell inserts (pore size 0.4μm, diameter 6.5mm) pre-coated with rat tail collagen (50μg/mL). Change the culture medium every two days and culture for approximately 3 weeks.

(2) BSA-FITC Permeability Assay: Add 200μL of Hank's solution containing 50μg/mL BSA-FITC to the upper chamber and 1mL of Hank's solution to the lower chamber. Incubate for 1 hour.

(3) Fluorescence Measurement: Aspirate 100μL of liquid from the lower chamber and measure the fluorescence intensity using a microplate reader at an excitation wavelength of 490-495nm and an emission wavelength of 515-520nm.

(4) Permeability Calculation: Calculate the apparent permeability (Pe) using the formula: $Pe (\mu L/min \cdot cm^2) = [20 \times C_t \times C_i] / [19.8 \times (C_i - C_t)]$, where C_t is the BSA-FITC concentration in the lower chamber of the experimental group, and C_i is the BSA-FITC concentration in the lower chamber of the cell-free Transwell insert group.

3. BSA-FITC Method for Detecting Cellular Endocytosis

(1) Cell Seeding and Treatment: Seed cells at a density of 15,000 cells/cm² onto coverslips placed in 12-well plates.

(2) BSA-FITC Incubation: Incubate cells with the BSA-FITC working solution at 37°C in the dark for 1 hour.

(3) Fixation and Staining: Wash cells with ice-cold PBS, fix with 4% paraformaldehyde for 20 minutes, permeabilize with 0.3% Triton X-100 for 30 minutes, and stain nuclei with DAPI for 1 minute.

(4) Image Acquisition and Analysis: Capture images using a fluorescence microscope and perform semi-quantitative analysis of fluorescence intensity.

Precautions:

(1) The BSA-FITC working solution must be stored and used protected from light, and the incubation process should be carried out in the dark.

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(2) In the cellular endocytosis experiment, wash thoroughly after BSA-FITC incubation to remove uninternalized fluorescent labels.

(3) For your safety and health, please wear a lab coat and disposable gloves during operation.

References:

[1] Xia Y, Lu YW, Hao RJ, et al. Catalpol relieved angiotensin II-induced blood-brain barrier destruction via inhibiting the TLR4 pathway in brain endothelial cells. *Pharm Biol.* 2022 Dec;60(1):2210-2218.

Background

BSA-FITC is a fluorescently labeled protein conjugate. BSA-FITC retains the protein-binding properties of BSA while providing a strong green fluorescent signal, with an excitation wavelength of 490-495nm and an emission wavelength of 515-520nm. BSA-FITC can be used in related research such as cell tracking, immunofluorescence detection, drug release studies, and autoantibody detection in clinical diagnostics^[1-4].

References:

[1] Kim BS, Oh JM, Kim KS, et al. BSA-FITC-loaded microcapsules for in vivo delivery. *Biomaterials.* 2009 Feb;30(5):902-9.

[2] Chaikhumwang P, Kitsongsermthong J, Manopakdee K, et al. Cationic Polylactic Acid-Based Nanoparticles Improve BSA-FITC Transport Across M Cells and Engulfment by Porcine Alveolar Macrophages. *AAPS PharmSciTech.* 2020 May 15;21(4):134.

[3] Rekowska N, Wulf K, Koper D, et al. Influence of PEGDA Molecular Weight and Concentration on the In Vitro Release of the Model Protein BSA-FITC from Photo Crosslinked Systems. *Pharmaceutics.* 2023 Mar 23;15(4):1039.

[4] Ashcroft RG. Measurement of ligand binding, E-BSA-FITC. *Cytometry.* 1986 May;7(3):298-9.

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