Data Sheet (Cat.No.T209617)

TargetMol

Cy5.5-SE TEA

Chemical Properties

CAS No. :

Formula: C51H62N4O16S4

Molecular Weight:

Storage: Keep away from direct sunlight
Store at -20°C
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Cy5.5-SE TEA (Cyanine5.5 NHS ester TEA) is a CY dye. CY is an abbreviation for cyanine, a compound composed of two nitrogen atoms linked by an odd number of methine units. Cyanine compounds are characterized by their long wavelengths, tunable absorption and emission, high extinction coefficients, good water solubility, and relatively simple synthesis. CY dyes are frequently used for labeling proteins, antibodies, and small molecules. For labeling proteins and antibodies, the process can be achieved through a straightforward mixing reaction. This document provides a reference method for labeling protein antibodies. Storage instructions: protect from light.
Targets(IC50)	Others
In vitro	Solution Preparation: 1. Protein Preparation: To achieve optimal labeling efficiency, prepare the protein (antibody) at a concentration of 2 mg/mL. Ensure the protein solution's pH is 8.5±0.5; if the pH is below 8.0, adjust with 1 M sodium bicarbonate. A concentration below 2 mg/mL will significantly reduce labeling efficiency—aim for a final protein concentration between 2-10 mg/mL for best results. Use buffers free of primary amines (e.g., Tris or glycine) and ammonium ions to avoid affecting the labeling efficiency. 2. Dye Preparation: Dilute the CY dye in anhydrous DMSO to make a 10 mM stock solution, mixing thoroughly using a glass tube or a vortex. Note: Store the CY stock solution in aliquots, protected from light, at -20 °C or -80 °C. 3. Calculation of Dye Working Solution Volume: The amount of CY dye needed for the labeling reaction depends on the protein amount, with an optimal molar ratio of CY dye to protein being about 10. For instance, to label 500 µL of 2 mg/mL IgG (MW=150,000) using 100 µL DMSO to dissolve a tube of 1 mg CY dye, the required CY dye volume is 3.95 µL, calculated as follows (using Cy5.5-SE as an example): 1) mmol (IgG) = mg/mL (IgG) × mL (IgG) / MW (IgG) = 2 mg/mL × 0.5 mL / 150,000 mg/mmol = 6.7×10^{-6} mmol 2) mmol (Cy5.5-SE) = mmol (IgG) × 10 = 6.7×10^{-6} mmol × 10 = 6.7×10^{-5} mmol 3) µL (Cy5.5-SE) = mmol (Cy5.5-SE) × MW (Cy5.5-SE) / mg/µL (Cy5.5-SE) = 6.7×10^{-5} mmol × 590.15 mg/mmol / 0.01 mg/µL = 3.95 µL

In vitro	Usage Instructions: 1. Labeling Reaction: Slowly add the freshly prepared 10 mg/mL CY dye to the 0.5 mL protein sample solution, gently mix, and briefly centrifuge to collect the sample at the bottom of the reaction tube. Avoid vigorous mixing to prevent protein denaturation. Incubate the reaction tube in the dark at room temperature with gentle shaking for 60 minutes, gently inverting the tube every 10-15 minutes to mix the reactants thoroughly and improve labeling efficiency. 2. Protein Desalting Purification: The following outlines the purification of the dye-protein conjugate using a SepHadex G-25 column as an example: 1) Prepare the SepHadex G-25 column according to the manufacturer's instructions. 2) Load the reaction mixture onto the top of the SepHadex G-25 column. 3) When the sample reaches below the resin surface, immediately add PBS (pH 7.2-7.4). 4) Continue adding PBS (pH 7.2-7.4) to complete column purification, collecting fractions containing the desired dye-protein conjugate. The above information is based on published literature. Experimental procedures should be appropriately modified to meet specific research demands.
In vivo	Cy5.5-labeled factor VIIa has been developed for tumor imaging. The Cy5.5 attached to these targeting proteins specifically locates to tumor xenografts for at least 14 days, while free Cy5.5 does not localize to any xenografts or organs. This imaging technique targeting tumor VEC can be employed for the detection of primary tumors and metastatic sites, as well as for monitoring therapeutic responses in vivo. Additionally, a pH/temperature-sensitive magnetic nanogel combined with Cy5.5-labeled lactoferrin (Cy5.5-Lf-MPNA nanogel) has been designed as a promising contrast agent for preoperative MRI and intraoperative fluorescence imaging of gliomas.

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