Data Sheet (Cat.No.T209509)

TargetMol

Cy5.5 TEA

Chemical Properties

CAS No. :

Formula: C47H59N3O14S4

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 TEA is a type of CY dye, where CY stands for Cyanine, a compound composed of two nitrogen atoms connected by an odd number of methine units. Cyanine compounds are characterized by long wavelengths, tunable absorption and emission, high extinction coefficients, good water solubility, and relatively simple synthesis. CY dyes are frequently utilized for labeling proteins, antibodies, and small molecules. For protein antibody labeling, coupling can be achieved through a straightforward mixing reaction. Below, we introduce a method for labeling protein antibodies that serves as a useful reference.
Targets(IC50)	Others
In vitro	Preparation of the stock solution and labeling procedure involve several steps: 1. Protein Preparation: The concentration of protein (antibody) should be adjusted to 2 mg/mL to ensure optimal labeling efficiency. Ensure the protein solution has a pH of 8.5 ±0.5; if below pH 8.0, adjust with 1 M sodium bicarbonate. If the protein concentration is under 2 mg/mL, labeling efficiency decreases significantly. Aim for a concentration range of 2-10 mg/mL. Proteins should be in buffers devoid of primary amines (like Tris or glycine) and ammonium ions to prevent interference with labeling. 2. Dye Preparation: Dilute CY dye in anhydrous DMSO to create a 10 mM stock solution, ensuring thorough mixing using glass pipettes or vortexing. Note: Aliquot and store the CY stock solution at -20°C or -80°C, protected from light. Activate using a condensate solution (500 μg/mL) before subsequent labeling experiments. 3. Calculation of Working Dye Volume: The amount of CY dye required for the labeling reaction depends on the protein amount, with an optimal molar ratio of CY dye to protein being around 10. For example, to label 500 μL of 2 mg/mL IgG (MW=150,000), dissolve 1 mg of CY dye in 100 μL DMSO, needing 3.95 μL CY volume. Detailed calculation: 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 (CY3-NHS ester) = mmol (IgG) × 10 = 6.7×10^{-6} mmol × 10 = 6.7×10^{-5} mmol 3) μL (CY3-NHS ester) = mmol (CY3-NHS ester) × MW (CY3-NHS ester) / mg/μL (CY3-NHS ester) = 6.7×10^{-5} mmol × 590.15 mg/mmol / 0.01 mg/μL = 3.95 μL

In vitro	Usage Method: 1. Labeling Reaction: Freshly activate the calculated amount of 10 mM CY dye (about 10 μL stock with 50 μL 500 μg/mL condensate solution) and slowly add to 0.5 mL protein sample, gently mixing. Briefly centrifuge to collect the sample at the tube bottom. Avoid vigorous mixing to prevent protein denaturation. 2. Protein Purification and Desalting: Purify dye-protein conjugates using a SepHadex G-25 column: 1) Prepare the SepHadex G-25 column according to manufacturer instructions. 2) Load the reaction mixture onto the column top. 3) As the sample runs below the resin surface, immediately add PBS (pH 7.2-7.4). 4) Add more PBS (pH 7.2-7.4) to finish column purification, collecting fractions with desired dye-protein conjugates. 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 applications. When labeled with these targeted proteins, Cy5.5 specifically localizes to tumor xenografts for a period of at least 14 days, whereas unbound Cy5.5 does not localize to any xenografts or organs. This imaging technique, targeting anti-tissue factor in tumor VEC, is effective for detecting primary tumors and metastatic sites, as well as monitoring treatment 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.