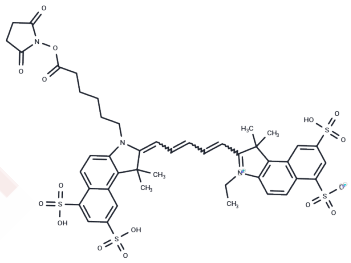
Data Sheet (Cat.No.T18947)

TargetMol

Cy5.5-SE

Chemical Properties



CAS No. : 442912-55-2

Formula: C45H47N3O16S4

Molecular Weight: 1014.13

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 is a CY5.5-derived dye. CY5.5 is an amine-reactive, near-infrared (NIR) fluorophore with Ex/Em = 675/695 nm, frequently employed for labelling nucleic acids and proteins.
Targets(IC50)	Others
In vitro	Reference for Using Cy5.5-SE: 1. Protein Preparation It is recommended to prepare the protein (antibody) at a concentration of 2 mg/mL, with the pH adjusted to 8.5 ± 0.5. If the pH drops below 8.0, adjust it using 1 M sodium bicarbonate. Note: If the protein concentration is below 2 mg/mL, labeling efficiency will decrease significantly. For optimal labeling, keep the protein concentration between 2–10 mg/mL. The protein buffer should not contain primary amines (like Tris or glycine) or ammonium ions, as these interfere with labeling. 2. Dye Preparation Dissolve Cy5.5-SE dye in anhydrous DMSO to make a 10 mg/mL stock solution. Aliquot and store the solution at -20°C or -80°C, protected from light. 3. Calculating Dye Amount The amount of Cy5.5-SE dye needed depends on the amount of protein to be labeled. The ideal molar ratio of Cy5.5-SE dye to protein is approximately 10. Example: If you're labeling 500 µL of 2 mg/mL IgG (MW = 150,000), and 1 mg of Cy5.5-SE dye is dissolved in 100 µL DMSO, then the required volume of Cy5.5-SE dye is 6.79 µL. The detailed calculation is: 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 × 1014.13 mg/mmol / 0.01 mg/µL = 6.79 µL 4. Labeling Reaction Gradually add the calculated volume of 10 mg/mL CY dye to 0.5 mL of the protein solution. Mix gently and briefly centrifuge to collect the sample at the bottom of the tube. Incubate in the dark at room temperature with gentle shaking for 60 minutes. Invert the tube several times every 10–15 minutes. 5. Protein Purification

In vitro	Purify the dye-protein conjugate using an appropriate method. 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 was developed for tumor imaging: These targeted proteins can specifically accumulate in tumor parazacco spilurus subsp. spilurus grafts for at least 14 days, whereas free Cy5.5 does not accumulate in any grafts or organs. This tumor VEC anti-tissue factor-based imaging strategy enables detection of primary and metastatic lesions and monitoring of therapeutic responses in vivo [1]. Additionally, pH/temperature-sensitive magnetic nanogels conjugated with Cy5.5-labeled lactoferrin (Cy5.5-Lf-MPNA nanogels) were designed as promising contrast agents for preoperative MRI and intraoperative fluorescence imaging of glioma [2].

Solubility Information

Solubility	DMSO: 80 mg/mL (78.89 mM) (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	0.9861 mL	4.9303 mL	9.8607 mL
5 mM	0.1972 mL	0.9861 mL	1.9721 mL
10 mM	0.0986 mL	0.493 mL	0.9861 mL
50 mM	0.0197 mL	0.0986 mL	0.1972 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Zhu S, et al. Visualizing cancer and response to therapy in vivo using Cy5.5-labeled factor VIIa and anti-tissue factor antibody. J Drug Target. 2015 Apr;23(3):257-65.
Ptaszek M. Rational design of fluorophores for in vivo applications. Prog Mol Biol Transl Sci. 2013;113:59-108.
Shindy, H. A. (2017). Fundamentals in the chemistry of cyanine dyes: A review. Dyes and Pigments, 145, 505-513.
Jiang L, et al. pH/temperature sensitive magnetic nanogels conjugated with Cy5.5-labled lactoferrin for MR and fluorescence imaging of glioma in rats. Biomaterials. 2013 Oct;34(30):7418-28.
Lim B, et al. A Unique Recombinant Fluoroprobe Targeting Activated Platelets Allows In Vivo Detection of Arterial Thrombosis and Pulmonary Embolism Using a Novel Three-Dimensional Fluorescence Emission Computed Tomography (FLECT) Technology. Theranostics. 2017 Feb 26;7(5):1047-1061.