

Product Data Sheet

Product Name: Biotin-PEG4-NHS ester

Cat. No.: GC39610

Chemical Properties

Cas. No. 459426-22-3

SMILES O=C(ON1C(CCC1=O)=O)CCOCCOCCOCCOCCNC(CCCC[C@@H]2SC[C@]([C@]2([H])N3)([H])NC3=O)=O

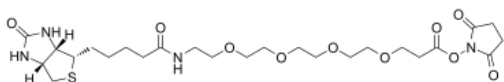
Formula $C_{25}H_{40}N_4O_{10}S$ M.Wt 588.67

Solubility DMSO: 250 mg/mL (424.69 mM) Storage -20°C, protect from light, unstable in solution, ready to use.

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

(1) Working solution: Weigh the solid and dilute it with Milli-Q water or other suitable buffer to the required working concentration.

Note: Store solids at -20°C or -80°C protected from light. Please adjust the optimal working

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concentration according to the actual situation or refer to the literature to set the gradient concentration yourself to explore. The working fluid must be prepared and used immediately.

2. Using Biotin-PEG4-NHS ester to load hydroxymethylcholine synthase (HMBS) onto super streptavidin (SSA) biosensor^[1] (from the literature, for reference only)

(1) Biotin-PEG4-NHS ester was mixed with protein at a molar ratio greater than 1.5:1 and reacted at room temperature for 30min.

(2) Use Zeba spin desalting column to remove excess biotin and replace the gel filtration buffer with reaction buffer PBS-P+ supplemented with 5% DMSO.

(3) Determine the concentration of biotinylated protein.

Note: Try to avoid using buffers containing amino acids, proteins or other active compounds during experiments, as these substances may react with biotin.

References:

[1] Bustad H J, Toska K, Schmitt C, et al. A pharmacological chaperone therapy for acute intermittent porphyria[J]. Molecular Therapy, 2020, 28(2): 677-689.

Background

Biotin-PEG4-NHS ester is a highly hydrophilic amine-reactive biotinylation reagent, which is mainly used for simple and effective biotinylation labeling of antibodies, proteins and other macromolecules containing primary amines (-NH₂)^[1, 2]. Biotin-PEG4-NHS ester is composed of biotin, polyethylene glycol and N-hydroxysuccinimide ester. Biotin can play a coenzyme function and participate in a variety of carboxylation reactions. Polyethylene glycol makes the biotinylated molecules water-soluble. N-hydroxysuccinimide ester reacts specifically and efficiently with lysine and N-terminal amino groups to form stable amide bonds^[3, 4]. Biotin-PEG4-NHS ester has good biocompatibility and can be used to prepare biomolecular probes to achieve visualization, positioning and tracking of biomolecules^[5]. Biotin-PEG4-NHS ester can load the enzyme onto super streptavidin (SSA) biosensor^[6].

References:

[1] Shtylev G F, Shishkin I Y, Shershov V E, et al. Immobilization of protein probes on biochips with brush polymer cells[J]. Russian Journal of Bioorganic Chemistry, 2024, 50(5): 2036-2049.

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- [2]Beard H A. Affinity-guided chemical probes for the study of protein interactions[D]. University of Leeds, 2018.
- [3]Sapsford K E, Algar W R, Berti L, et al. Functionalizing nanoparticles with biological molecules: developing chemistries that facilitate nanotechnology[J]. Chemical reviews, 2013, 113(3): 1904-2074.
- [4]Jiang H, D'Agostino G D, Cole P A, et al. Selective protein N-terminal labeling with N-hydroxysuccinimide esters[M]//Methods in enzymology. Academic Press, 2020, 639: 333-353.
- [5]Xiang Y, Lan T, Lu Y. Using the widely available blood glucose meter to monitor insulin and HbA1c[J]. Journal of Diabetes Science and Technology, 2014, 8(4): 855-858.
- [6]Bustad H J, Toska K, Schmitt C, et al. A pharmacological chaperone therapy for acute intermittent porphyria[J]. Molecular Therapy, 2020, 28(2): 677-689.

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