

Product Data Sheet

Product Name: Biotin-16-UTP

Cat. No.: GB20150

Chemical Properties

Cas. No. 280549-77-1 (free acid)

Formula $C_{32}H_{52}N_7O_{19}P_3S$ (free acid)

M.Wt 963.8 (free acid)

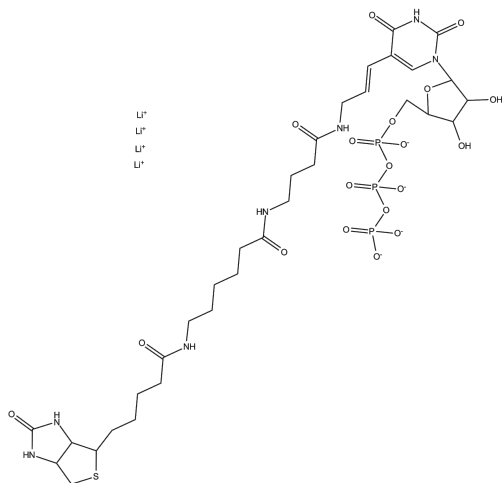
Solubility

Storage Store at -20°C or below, always avoid freeze-thaw cycles and avoid direct sunlight.

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) Stock solution: This product is provided in 10mM stock liquid form.

Note: After the unused stock solution is aliquoted, store it at -20°C or -80°C in the dark to avoid

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repeated freezing and thawing.

(2) Working solution: Dilute the stock solution with the experimental buffer to prepare a working concentration of 0.5mM.

Note: Please adjust the working solution concentration according to the actual situation and prepare it before use.

2. Preparation of RNA probe with Biotin-16-UTP ^[1](from the literature, for reference only)

(1) Template DNA preparation: In a 0.5mL test tube, add 1µg purified template DNA or 4µL control DNA to sterile, RNase-free diethyl pyrocarbonate (DEPC) water, and the total sample volume is 13µL.

(2) Preparation of in vitro transcription reaction system: For each sample, add 2µL 10× deoxynucleoside triphosphate mixture, 2µL 10× transcription buffer, 1µL Protector RNase inhibitor and 2µL RNA polymerase SP6 or RNA polymerase T7.

(3) Labeling reaction: Add Biotin-16-UTP (final concentration is usually 0.5mM) and incubate at 37°C for 2h to prepare RNA probe.

(4) Termination reaction: Add 2mL RNase-free-DNase I to each tube to remove template DNA and incubate at 37°C for 10min. Add 2mL 0.2M EDTA (pH 8.0) to each tube to terminate the DNase I reaction.

(5) Isolation of RNA probe: Isolate RNA probe by lithium chloride precipitation and resuspend in 25µL DEPC water.

References:

[1] Bharati B K, Swetha R K, Chatterji D. Identification and characterization of starvation induced msdgc-1 promoter involved in the c-di-GMP turnover[J]. Gene, 2013, 528(2): 99-108.

Background

Biotin-16-UTP is a biotin-labeled UTP used for in vitro transcription to prepare RNA probes ^[1]. Biotin-16-UTP is an active substrate for RNA polymerase and can be incorporated by a variety of RNA polymerases (including SP6, T3, and T7 RNA polymerases) to form labeled RNA^[2, 3]. Biotin-16-UTP-labeled RNA can be detected by reporter molecules linked to streptavidin, avidin, or anti-biotin

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antibodies^[4, 5]. Biotin-16-UTP can be used for molecular hybridization and RNA-protein interaction studies^[6].

References:

- [1]McKenney K M, Connacher R P, Dunshee E B, et al. Chemi-Northern: a versatile chemiluminescent northern blot method for analysis and quantitation of RNA molecules[J]. RNA, 2024, 30(4): 448-462.
- [2]Chien H, Alston C I, Dix R D. Suppressor of cytokine signaling 1 (SOCS1) and SOCS3 are stimulated within the eye during experimental murine cytomegalovirus retinitis in mice with retrovirus-induced immunosuppression[J]. Journal of Virology, 2018, 92(18): 10.1128/jvi. 00526-18.
- [3]Chen M, Zhang L, Guo Y, et al. A novel lncRNA promotes myogenesis of bovine skeletal muscle satellite cells via PFN1-RhoA/Rac1[J]. Journal of Cellular and Molecular Medicine, 2021, 25(13): 5988-6005.
- [4]Ritchey B, Hai Q, Han J, et al. Genetic variant in 3'untranslated region of the mouse pycard gene regulates inflammasome activity[J]. Elife, 2021, 10: e68203.
- [5]Bratthauer G L. The avidin–biotin complex (ABC) method and other avidin–biotin binding methods[J]. Immunocytochemical methods and protocols, 2010: 257-270.
- [6]Siprashvili Z, Webster D E, Kretz M, et al. Identification of proteins binding coding and non-coding human RNAs using protein microarrays[J]. BMC genomics, 2012, 13: 1-13.

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