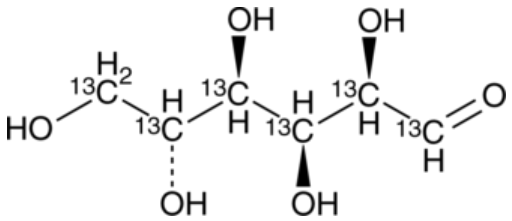
Product Data Sheet

Product Name: D-(+)-Glucose-13C6
Cat. No.: GC43367

Chemical Properties

Cas. No.	110187-42-3		
SMILES	O[13CH2][13C@@H](O)[13C@@H](O)[13C@H](O)[13C@@H](O)[13CH]=O		
Formula	$[^{13}C]_6H_{12}O_6$	M.Wt	186.1
Solubility	DMF: 20 mg/ml,DMSO: 30 mg/ml,Ethanol: 0.3 mg/ml,PBS (pH 7.2): 10 mg/ml	Storage	Store at -20°C,protect from light, stored under nitrogen
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: Dissolve D-(+)-Glucose-13C6 in experimental buffer.

Note: Please adjust the optimal working concentration according to the actual situation or refer to the literature to set the gradient concentration by yourself. The working solution must be prepared and used immediately.

2. Experimental steps for using D-(+)-Glucose-13C6 as an intracellular amino acid tracer [1] (from the literature, for reference only)

(1) Treat cells: Treat cells with 2mM D-(+)-Glucose-13C6 for 8 hours.

(2) Wash cells: Wash cells three times with PBS buffer.

(3) Harvest cells: Harvest cells with 80% methanol and store at -80 °C until further analysis.

(4) Sample processing: Before analysis, vortex the 80% methanol suspension and centrifuge at 9560 g for 5 minutes at 4 °C. Collect the supernatant and wash the pellet twice with 200 μL 80% methanol, centrifuging at 13800 g for the final wash.

(5) Combine and dry the extracts: Combine all extracts and dry them in a vacuum evaporator.

(6) Redissolve the samples: Redissolve the samples in 100 μL water and take samples for measurement of organic acids and amino acids.

(7) Amino acid isotope analysis: Amino acid isotope analysis was performed using HPLC-ESI-MS/MS

Note: This protocol provides guidance for using D-(+)-Glucose-13C6 as an intracellular amino acid tracer. It can be adjusted based on other literature and specific experimental requirements.

References:

[1]Luger A L, Lorenz N I, Urban H, et al. Activation of epidermal growth factor receptor sensitizes glioblastoma cells to hypoxia-induced cell death[J]. Cancers, 2020, 12(8): 2144.

Background

D-(+)-Glucose-13C6 is the stable isotope labeled counterpart of D-(+)-Glucose and is mainly used as an internal standard for the quantification of D-(+)-Glucose by GC- or LC-MS measurement [1]. D-(+)-Glucose is a monosaccharide that exists in nature and is used as an energy source by organisms. It is the common enantiomer of L-(-)-Glucose [2]. D-(+)-Glucose-13C6 can be used as a metabolic tracer to track glucose-related metabolic components in animals. For example, when added to the diet of fruit flies, changes in the concentrations of 15 amino acids can be detected [3]. D-(+)-Glucose-13C6 can be added to cell cultures to monitor fluctuations in cellular metabolite levels [4, 5].

References:

[1] Zhang H, Stevens R D, Young S P, et al. A convenient LC-MS method for assessment of glucose

kinetics in vivo with D-[13C6] glucose as a tracer[J]. Clinical chemistry, 2009, 55(3): 527-532.
[2] Toxvaerd S. The role of carbohydrates at the origin of homochirality in biosystems[J]. Origins of Life and Evolution of Biospheres, 2013, 43: 391-409.
[3] Al-Khshemawee H, Agarwal M, Du B, et al. Efficacy of D-glucose-13C6 as a label for amino acid identification and quantification in Mediterranean fruit flies (Diptera: Tephritidae)[J]. Journal of Entomological Science, 2020, 55(1): 117-125.
[4] Mehrotra P, Saquib N, Rao K V S. 13C Kinetic Labeling and Extraction of Metabolites from Adherent Mammalian Cells[J]. Bio-protocol, 2015, 5(8): e1447-e1447.
[5] Luger A L, Lorenz N I, Urban H, et al. Activation of epidermal growth factor receptor sensitizes glioblastoma cells to hypoxia-induced cell death[J]. Cancers, 2020, 12(8): 2144.

Caution: Product has not been fully validated for medical applications. For research use only.
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