

Product Data Sheet

Product Name: Creatinine-D3

Cat. No.: GC39366

Chemical Properties

Cas. No. 143827-20-7

SMILES O=C1N=C(N)N(C([2H])([2H])[2H])C1

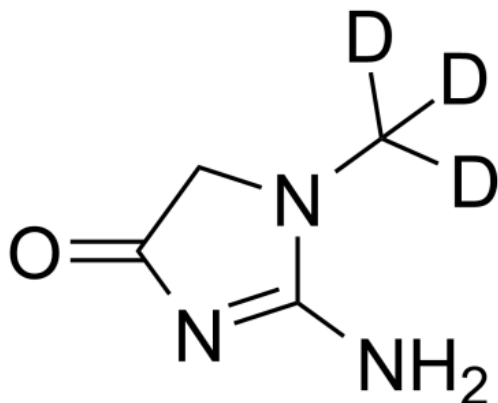
Formula $C_4H_4D_3N_3O$ M.Wt 116.14

Solubility PBS (pH 7.2): 10 mg/ml Storage Store at -20°C

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

Metabolic Tracing of Deuterated Creatinine in Cells by Mass Spectrometry [1]

This protocol is adapted from research data and provided for reference only. Adjustments may be necessary based on specific experimental requirements.

1. Reagent and Cell Preparation: Dissolve Creatinine-D3 in cell culture medium to prepare working solutions at the required concentrations (0, 20, 180 μM), and sterilize by filtering through a 0.22 μm

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membrane. Culture the cells in cell culture plates.

2. Creatinine-D3 Treatment: Replace the cell culture medium with serum-free medium, and add Creatinine-D3 working solutions at concentrations of 0 μ M, 20 μ M, and 180 μ M, respectively. Incubate the cells in a cell culture incubator for 24 hours.

3. Sample Preparation and Metabolite Extraction: After treatment, discard the culture medium and gently wash the cells once with ice-cold phosphate-buffered saline (PBS). Add 80% methanol/water solution to lyse the cells and extract intracellular metabolites on ice. Collect the extracts, centrifuge if necessary, and take the supernatant for subsequent analysis.

4. Liquid Chromatography-High Resolution Mass Spectrometry (LC-HRMS) Analysis: Separate the samples using an ultra-high performance liquid chromatography (UHPLC) system equipped with a T3 chromatographic column. Mobile phase A is 0.1% formic acid in water, and mobile phase B is 0.1% formic acid in acetonitrile. Metabolites are detected using an electrospray ionization (ESI) source in positive ion mode. The mass spectrometry scanning parameters are set as follows: Full MS/data-dependent MS2 (Full MS/dd-MS2) mode, primary scan resolution 70,000, secondary scan resolution 17,500, scanning mass range m/z 70-1050.

5. Data Processing and Tracing Analysis: Precisely measure the mass spectral peaks of intracellular Creatinine-D3 and its metabolite Creatine-D3 by high-resolution mass spectrometry. Trace the process of exogenous Creatinine-D3 uptake by cells and its conversion to Creatine-D3.

Precautions:

(1) Mass spectrometry analysis has high sensitivity and is suitable for detecting trace metabolite conversions within cells.

(2) For your safety and health, please wear a lab coat and disposable gloves during operation.

References:

[1] Fang J, Huang X, Guo C, et al. Creatinine promotes adipose tissue wasting in chronic kidney disease via creatine and futile creatine cycle. Mol Metab. 2025 Aug;98:102191.

Background

Creatinine-D3 is a deuterium-labeled creatinine compound. Creatinine-D3 serves as an internal standard for accurate quantitative analysis of creatinine via GC- or LC-mass spectrometry.

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Creatinine-D3 can be applied in research related to renal function assessment, muscle mass measurement, and aging metabolism studies^[1-4].

References:

- [1] Allen PJ. Creatine metabolism and psychiatric disorders: Does creatine supplementation have therapeutic value? *Neurosci Biobehav Rev.* 2012 May;36(5):1442-62.
- [2] Zhang Q, Qin Z, Wang Q, et al. Pharmacokinetic profiling of ZCL-278, a cdc42 inhibitor, and its effectiveness against chronic kidney disease. *Biomed Pharmacother.* 2024 Oct;179:117329.
- [3] Hu C, Zhang JQ, Zhuang XY, et al. The hidden potential of solasonine: Targeting non-small cell lung cancer (NSCLC) metastasis through GATM and Smad2 pathways. *Phytomedicine.* 2025 Apr;139:156455.
- [4] Xu C, Zhang M, Zhang S, et al. Simultaneous determination of choline, L-carnitine, betaine, trimethylamine, trimethylamine N-oxide, and creatinine in plasma, liver, and feces of hyperlipidemic rats by UHPLC-MS/MS. *J Chromatogr B Analyt Technol Biomed Life Sci.* 2024 Aug 1;1243:124210.

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