α-Cyano-4-hydroxycinnamic acid

Cat. No.: HY-107641

CAS No.: 28166-41-8

Molecular Formula: $C_{10}H_7NO_3$

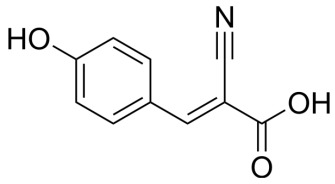
Molecular Weight: 189.17

Target: Monocarboxylate Transporter

Pathway: Membrane Transporter/Ion Channel

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (1321.56 mM; Need ultrasonic)

H_2O : < 0.1 mg/mL (ultrasonic;warming;heat to 60°C) (insoluble)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	5.2863 mL	26.4313 mL	52.8625 mL
5 mM	1.0573 mL	5.2863 mL	10.5725 mL
10 mM	0.5286 mL	2.6431 mL	5.2863 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (11.00 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (11.00 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (11.00 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

α-Cyano-4-hydroxycinnamic acid (α-Cyano-4-hydroxycinnamate) is a potent and non-competitive inhibitor of monocarboxylate transporters (MCTs). α-Cyano-4-hydroxycinnamic acid inhibits mitochondrial pyruvate transporter with a K_i of 6.3 μM. α-Cyano-4-hydroxycinnamic acid is used as a matrix to facilitate peptide ionization in matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry applications[1][2].

In Vitro

α-Cyano-4-hydroxycinnamic acid (α-Cyano-4-hydroxycinnamate) inhibits monocarboxylates transport such as lactate and

pyruvate[2].
?α-Cyano-4-hydroxycinnamic acid (CHC; 0.5 mM and 1 mM) of 1 mM has a significant inhibitory effect on branching morphogenesis and decreases the epithelial perimeter and area of lung explants in a dose dependent way[2].
?At 100 μM concentration, α-Cyano-4-hydroxycinnamic acid rapidly and almost totally inhibits O_2 uptake by rat heart mitochondria oxidizing pyruvate. Inhibition can be detected at concentrations of inhibitor as low as 1 μM although inhibition took time to develop at this concentration[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Autophagy. 2023 Oct 5.
- SSRN. 2023 Jun 15.

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REFERENCES

[1]. A P Halestrap, et al. The mitochondrial pyruvate carrier. Kinetics and specificity for substrates and inhibitors. Biochem J. 1975 Apr; 148(1): 85-96.

[2]. Sara Granja, et al. The Monocarboxylate Transporter Inhibitor α-cyano-4-hydroxycinnamic Acid Disrupts Rat Lung Branching. Cell Physiol Biochem. 2013;32(6):1845-56.

[3]. Makoto Watanabe, et al. Improvement of Mass Spectrometry Analysis of Glycoproteins by MALDI-MS Using 3-aminoquinoline/α-cyano-4-hydroxycinnamic Acid. Anal Bioanal Chem. 2013 May;405(12):4289-93.

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

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