7ACC2

Cat. No.: HY-D0713

CAS No.: 1472624-85-3

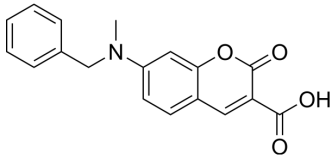
Molecular Formula: $C_{18}H_{15}NO_4$

Molecular Weight: 309.32

Target: Monocarboxylate Transporter; Mitochondrial Metabolism

Pathway: Membrane Transporter/Ion Channel; Metabolic Enzyme/Protease

Storage: 4°C, protect from light
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 50 mg/mL (161.64 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.2329 mL	16.1645 mL	32.3290 mL
	5 mM	0.6466 mL	3.2329 mL	6.4658 mL
	10 mM	0.3233 mL	1.6164 mL	3.2329 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: 2.5 mg/mL (8.08 mM); Suspended solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

7ACC2 is a potent monocarboxylate transporter (MCT) inhibitor with an IC_{50} of 11 nM for inhibition of [^{14}C]-lactate influx. 7ACC2 is also a potent inhibitor of mitochondrial pyruvate transport. 7ACC2 is an anticancer agent through inhibition of lactate flux[1][2].

IC_{50} & Target

IC50: 11 nM (Monocarboxylate transporter)[1]
Mitochondrial pyruvate transport[2]

In Vitro

7ACC2 (compound 19; 72 hours) inhibits SiHa cells proliferation in lactate-containing medium with an EC50 of 0.22 μM. In SiHa cells, lactate uptake primarily depends on the high affinity MCT1 transporter[1].
7ACC2 (compound 19) shows an excellent chemical stability in simulated gastric (SGF) and intestinal (SIF) fluids, a good apparent permeability coefficient (Papp) through Caco-2 monolayer and a high metabolic stability on mouse (MLM) and human liver microsomes (HLM) as well as on human hepatocytes[1].
7ACC2 is a potent inhibitor of mitochondrial pyruvate transport which consecutively blocks extracellular lactate uptake by promoting intracellular pyruvate accumulation[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

7ACC2 (3 mg/kg; intraperitoneal administration; daily; for 5 days or 10days) treatment significantly inhibits tumor growth in mice. 7ACC2 radiosensitizes tumor cells by reducing hypoxia in vivo[2].

The intraperitoneal administration of 7ACC2 (compound 19; 3 mg/kg) to mice leads to a C_{max} of 1246 ng/ml (4 μM) in a very short time (T_{max}=10 min) associated with a plasma half-life of 4.5 h[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	7-week-old female NMRI nude mice with radiotherapy administered[2]
Dosage:	3 mg/kg
Administration:	Intraperitoneal administration; daily; for 5 days or 10days
Result:	A significant increase in tumor growth delay was observed.

CUSTOMER VALIDATION

- Cell. 2021 Jan 21;184(2):370-383.e13.
- Theranostics. 2019 Jan 30;9(4):1001-1014.
- EBioMedicine. 2023 Jan 27;88:104444.
- Clin Transl Med. 2021 Jun;11(6):e467.
- OncoImmunology. 2022 Dec 22;12(1):2160558.

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REFERENCES

[1]. Draoui N, et al. Synthesis and pharmacological evaluation of carboxycoumarins as a new antitumor treatment targeting lactate transport in cancer cells. Bioorg Med Chem. 2013 Nov 15;21(22):7107-17.

[2]. Cyril Corbet, et al. Interruption of lactate uptake by inhibiting mitochondrial pyruvate transport unravels direct antitumor and radiosensitizing effects. Nat Commun. 2018 Mar 23;9(1):1208.

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