Aurintricarboxylic acid

Cat. No.: HY-122575

CAS No.: 4431-00-9

Molecular Formula: $C_{22}H_{14}O_9$

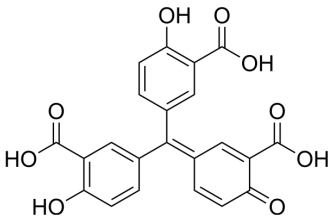
Molecular Weight: 422.34

Target: P2X Receptor; Influenza Virus; Topoisomerase; MicroRNA; Apoptosis

Pathway: Membrane Transporter/Ion Channel; Anti-infection; Cell Cycle/DNA Damage; Epigenetics; Apoptosis

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 : 125 mg/mL (295.97 mM; Need ultrasonic)
NH4OH : 10 mg/mL (23.68 mM; Need ultrasonic)
H_2O : < 0.1 mg/mL (ultrasonic) (insoluble)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	2.3678 mL	11.8388 mL	23.6776 mL
	5 mM	0.4736 mL	2.3678 mL	4.7355 mL
	10 mM	0.2368 mL	1.1839 mL	2.3678 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 (4.92 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (4.92 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Aurintricarboxylic acid is a nanomolar-potency, allosteric antagonist with selectivity towards αβ-methylene-ATP-sensitive P2X1Rs and P2X3Rs, with IC_{50}s of 8.6 nM and 72.9 nM for rP2X1R and rP2X3R, respectively[1]. Aurintricarboxylic acid is a potent anti-influenza agent by directly inhibiting the neuraminidase[2]. Aurintricarboxylic acid is an inhibitor of topoisomerase II and apoptosis[3]. Aurintricarboxylic acid is a selective inhibitor of the TWEAK-Fn14 signaling pathway[4]. Aurintricarboxylic acid also acts as a cystathionine-lyase (CSE) inhibitor with an IC_{50} of 0.6 μM[5]. Aurintricarboxylic acid is a modifier of miRNAs that regulate miRNA function, with an IC_{50} of 0.47 μM[6].

IC_{50} & Target	Topoisomerase II	p2x1 Receptor 8.6 nM (IC_{50})	P2X3 Receptor 72.9 nM (IC_{50})	Apoptosis
	miRNA 0.47 μM (IC_{50})			

In Vitro

Aurintricarboxylic acid weakly inhibits P2X2/3Rs, P2X2Rs, P2X4Rs or P2X7Rs[1].
?Aurintricarboxylic acid inhibits ATP-induced currents in a concentration dependent manner[1].
?Aurintricarboxylic acid can inhibit the severe acute respiratory syndrome-associated coronavirus (SARS-CoV) and vaccinia virus[2].
?Aurintricarboxylic acid inhibits replication of influenza A and B viruses by inhibition of neuraminidase activities[2].
?Aurintricarboxylic acid inhibits TWEAK-Fn14-mediated NF-κB activation[4].
?Aurintricarboxylic acid (10 μM; 0.5-2 hours) suppresses TWEAK-Fn14-mediated NF-κB, Akt, and Src phosphorylation in GBM cells[4].
?Aurintricarboxylic acid represses TWEAK-stimulated glioma cell migration and invasion without causing cell cytotoxicity[4].
?Aurintricarboxylic acid (Compound 8) cannot regulate loading of endogenous let-7 onto AGO2 inside cultured cells, whereas can inhibit RISC loading of exogenous siRNA[6].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[4]

Cell Line:	T98G, A172, GBM44 glioma cells
Concentration:	10 μM
Incubation Time:	0.5 hour, 1 hour, 2 hours
Result:	Abrogated TWEAK activation of downstream signals including phosphorylation of the NF-κB family member p65, Akt, and Src in all three GBM cell lines.

CUSTOMER VALIDATION

- Cell Death Discov. 2022 Jul 19;8(1):328.

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REFERENCES

[1]. Obrecht AS, et al. Identification of aurintricarboxylic acid as a potent allosteric antagonist of P2X1 and P2X3 receptors. Neuropharmacology. 2019 Nov 1;158:107749.

[2]. Hashem AM, et al. Aurintricarboxylic acid is a potent inhibitor of influenza A and B virus neuraminidases. PLoS One. 2009 Dec 17;4(12):e8350.

[3]. Benchokroun Y, et al. Aurintricarboxylic acid, a putative inhibitor of apoptosis, is a potent inhibitor of DNA topoisomerase II in vitro and in Chinese hamster fibrosarcoma cells. Biochem Pharmacol. 1995 Jan 31;49(3):305-13.

[4]. Alison Roos, et al. Identification of aurintricarboxylic acid as a selective inhibitor of the TWEAK-Fn14 signaling pathway in glioblastoma cells. Oncotarget. 2017 Feb 14; 8(7): 12234–12246.

[5]. Youtian Hu, et al. Discovery of a Bioactive Inhibitor with a New Scaffold for Cystathionine γ-Lyase. J Med Chem. 2019 Feb 14;62(3):1677-1683.

[6]. Rengen Fan, et al. Small molecules with big roles in microRNA chemical biology and microRNA-targeted therapeutics. RNA Biol. 2019 Jun; 16(6): 707-718.

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

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