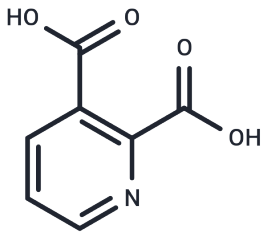
Data Sheet (Cat.No.T4096)

TargetMol

Quinolinic acid

Chemical Properties



CAS No. : 89-00-9

Formula: C7H5NO4

Molecular Weight: 167.12

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Quinolinic acid (QUIN) is an endogenous N-methyl-D-aspartate (NMDA) receptor agonist synthesized from L-tryptophan via the kynurenine pathway.
Targets(IC50)	Endogenous Metabolite,NMDAR,iGluR
In vitro	QUIN has an uptake system, its neuronal degradation enzyme is rapidly saturated, and the rest of the extracellular QUIN can continue stimulating the NMDA receptor. QUIN (10?μM) prevents of glutamate-induced excitotoxicity in primary cultures of rat cerebellar granule neurons, nevertheless mature organotypic cultures of rat corticostriatal system or caudate nucleus chronically exposed to 100?nM QUIN for up to 7 weeks show focal degeneration characterized by the presence of vacuoles in neuropil, swollen dendrites, occasional swollen post-synaptic elements, and degenerated neurons. In vitro QUIN treatment of human primary fetal neurons leads to a substantial increase of tau phosphorylation at multiple positions. The increase in QUIN-induced phosphorylation of tau is attributed to a decrease in the expression and activity of the major tau phosphatases. QUIN can inhibit B monoamine oxidase (MAO-B) in human brain synaptosomal mitochondria and also can be a potent inhibitor of phosphoenolpyruvate carboxykinase (EC 4.1.1.32) from rat liver cytoplasm, an important enzyme in the gluconeogenesis pathway that converts oxaloacetate to phosphoenolpyruvate. QUIN can increase free radical production by inducing NOS activity in astrocytes and neurons, leading to oxidative stress, increasing both poly(ADP-ribose) polymerase (PARP) activity and extracellular lactate dehydrogenase (LDH) activity [1].
In vivo	Quinolinic acid (QUIN), a neuroactive metabolite of the kynurenine pathway, is normally presented in nanomolar concentrations in human brain and cerebrospinal fluid (CSF) and is often implicated in the pathogenesis of a variety of human neurological diseases. The concentration of QUIN varies among different brain regions, with the cerebral cortex containing approximately 1.8?nmol/g wet weight; almost 2-fold than that found in the hippocampus (1?nmol/g wet weight). Intraarterial administration of either micromolar or millimolar concentrations of QUIN results in only negligible accumulations of this metabolite in the brain, suggesting that the central nervous system (CNS) appears to be well protected by the blood-brain barrier (BBB) from peripheral QUIN. QUIN can also increase glutamate release and inhibit its reuptake by astrocytes, thus increasing its concentration in the microenvironments, causing neurotoxicity and also limiting glutamate to glutamine recycling in astrocytes by decreasing glutamine synthetase activity. Intrastriatal injection of QUIN provokes a decrease in cellular respiration and

In vivo	ATP levels [1].

Solubility Information

Solubility	DMSO: 250 mg/mL (1495.93 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (11.97 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.9837 mL	29.9186 mL	59.8372 mL
5 mM	1.1967 mL	5.9837 mL	11.9674 mL
10 mM	0.5984 mL	2.9919 mL	5.9837 mL
50 mM	0.1197 mL	0.5984 mL	1.1967 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Lugohuitrón R, et al. Quinolinic acid: an endogenous neurotoxin with multiple targets.[J]. Oxidative Medicine and Cellular Longevity,2013,(22013-9-5), 2013, 2013:104024.

Latif-Hernandez A, et al. Quinolinic acid injection in mouse medial prefrontal cortex affects reversal learning abilities, cortical connectivity and hippocampal synaptic plasticity[J]. Scientific Reports, 2016, 6:36489.