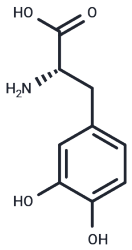
Data Sheet (Cat.No.T0848)

TargetMol

L-DOPA

Chemical Properties



CAS No. : 59-92-7

Formula: C9H11NO4

Molecular Weight: 197.19

Storage: Powder: -20°C for 3 years
Actual storage temperature shall be subject to the COA.

Biological Description

Description	L-DOPA (Levodopa) is an orally active metabolic precursor of the neurotransmitter dopamine. It can cross the blood-brain barrier and be converted into dopamine in the brain. L-DOPA exhibits anti-hyperalgesic effects and holds potential in Parkinson's disease research, and it can also be used to induce Parkinson's disease models.
Targets(IC50)	Endogenous Metabolite,Dopamine Receptor
In vitro	Levodopa produces at 25-200 μM concentrations a dose-dependent reduction of 3H-DA uptake in foetal rat midbrain cultures. Levodopa results in a decrease in the number of viable cells and tyrosine hydroxylase (TH) positive neurones, plus disruption of the overall neuritic network. [1] Levodopa induces dyskinesia in the absence of dopamine by excessive inhibition of neurons of the putamen-globus pallidus (GPe) projection and subsequent disinhibition of the globus pallidus (GPe). Levodopa results in a decrease in cytochrome oxidase messenger RNA expression in the globus pallidus (GPi). [2]
In vivo	Levodopa elicits the development of a variety of abnormal movements in monkeys with parkinsonism induced by the neurotoxin MPTP. Levodopa administrations result in an ectopic induction of the dopamine D3receptor expression in the CdPu in 6-OHDA-lesioned rats. [3] Levodopa (50 mg/kg) increases anandamide concentrations throughout thebasal ganglia via activation of dopamine D1/D2 receptors in intact rats. Levodopa produces increasingly severe oro-lingual involuntary movements which are attenuated by the cannabinoid agonist R(+)-WIN55,212-2 (1 mg/kg) in lesioned rats. [4] Levodopa administration reverses the up-regulation of D2 dopamine receptors seen in severely lesioned rats provided evidence that Levodopa reaches a biologically active concentration at the basal ganglia. [5]
Kinase Assay	Briefly, transfected HEK-293 cells, incubated in charcoal-treated Dulbecco's modified Eagle's medium for 24 h, are washed once with Hanks' solution and resuspended in a buffer containing 100 mM NaCl, 1 mM MgCl2, 1 mM EDTA, 1 mM EGTA, 250 mMsucrose, 20 mM Tris-HCl, pH 7.4. Cells are lysed by freezing in liquid nitrogen. Dehydrogenase activity is measured in a final volume of 20 μL containing the appropriate concentration of bile acid, 30 nCi of [3H]cortisol, and unlabeled cortisol to a final concentrations of 50 nM. The reaction is started by mixing cell lysate with the reaction mixture. Alternatively, endoplasmic reticulum microsomes are prepared from transfected HEK-293 cells and incubated with reaction mixture containing various concentrations of cortisol and CDCA. Incubation proceeded for 20 min, and the conversion of cortisol to cortisone is determined by thin layer chromatography (TLC). Because of the inaccuracy of the TLC

Kinase Assay	method at low conversion rates and the end-product inhibition of 11βHSD2 at conversion rates higher than 60-70%, only conversion rates between 10 and 60% are considered for calculation. The inhibitory constant IC50 is evaluated using the curve-fitting program. Results are expressed as means±S.E. and consist of at least four independent measurements.

Solubility Information

Solubility	DMSO: Insoluble, H2O: 2.5 mM,Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.0713 mL	25.3563 mL	50.7125 mL
5 mM	1.0143 mL	5.0713 mL	10.1425 mL
10 mM	0.5071 mL	2.5356 mL	5.0713 mL
50 mM	0.1014 mL	0.5071 mL	1.0143 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

Mena MA, et al. Neuroreport, 1993, 4(4), 438-440.
Qin Z, Fang W, Jiang Q, et al.The urchin-like gold nanoparticles/poly (ε-caprolactone)/chitosan electrospun nanofibers for antibacterial active packaging.International Journal of Biological Macromolecules.2024: 133287.
Dou S, Pan W, Pan X, et al.The organic acid metabolites of Bifidobacterium longum subsp. iuvenis alleviate ultraviolet irradiation-induced photoaging.Microbiological Research.2025: 128100.
Garcia-Effron G, et al. J Antimicrob Chemother, 2004, 53(6), 1086-1089.
Bordet R, et al. Proc Natl Acad Sci U S A, 1997, 94(7), 3363-3367.
Ferrer B, et al. Eur J Neurosci, 2003, 18(6), 1607-1614.
Murer MG, et al. Ann Neurol, 1998, 43(5), 561-575.
Perez-Pardo P, et al. Additive Effects of Levodopa and a Neurorestorative Diet in a Mouse Model of Parkinson's Disease. Front Aging Neurosci. 2018 Aug 3;10:237.