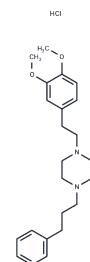


Cutamesine dihydrochloride

Chemical Properties

CAS No. :	165377-44-6
Formula:	C ₂₃ H ₃₂ N ₂ O ₂ ·2HCl
Molecular Weight:	441.43
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	Cutamesine dihydrochloride (SA4503 dihydrochloride) is a selective σ_1 receptor agonist (IC ₅₀ : 17.4 nM). It shows selectivity for σ_1 over σ_2 receptors, and inhibits angiotensin II-induced cardiomyocyte hypertrophy in vitro and attenuates myocardial hypertrophy in vivo. In a rat model of experimental stroke, it enhances brain plasticity and sensorimotor function.
Targets(IC ₅₀)	Sigma receptor
In vitro	The sigma receptor is implicated in various central nervous system diseases. SA4503, a potent σ_1 receptor agonist, exhibits a 103-fold higher affinity for σ_1 (IC ₅₀ =17.4 nM) than σ_2 (IC ₅₀ =1,784 nM) in guinea pig brain membranes and is 14-fold selective for σ_1 (K _i =4.6 nM) over σ_2 (K _i =63.1 nM) in guinea pig brain homogenates[1]. SA4503 protects motor neuron NSC34 cells against superoxide dismutase 1 and serum-free neurotoxicity, upregulating phosphorylation levels of Akt and extracellular signal-regulated kinase (ERK) 1/2[2], while reducing MAPK/ERK pathway activation and down-regulating the ionotropic glutamate receptor, GluR1[3].
In vivo	SA4503 extends the survival time in the SOD1 g93A mice[2].
Cell Research	The NSC34 cells are seeded at a density of 7000 cells per well into 96-well plates with D-MEM and transfected using Lipofectamine 2000 mixed with 2 μ g /mL of plasmid vector in D-MEM for 6 h. After 6 h, the cell-culture medium is replaced with fresh D-MEM and culture and allowed to proceed for a further 42 h. The cells are then transferred to serum-free D-MEM and immediately treated with SA4503 at a final concentration of 1, 3, or 10 nM[2].

Solubility Information

Solubility	DMSO: 10 mg/mL (22.65 mM),Sonication and heating are recommended. H ₂ O: 100 mg/mL (226.54 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: 1 mg/mL (2.27 mM),Sonication is recommended. <i>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</i>

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In vivo Formulation	<i>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.</i>
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.2654 mL	11.3268 mL	22.6536 mL
5 mM	0.4531 mL	2.2654 mL	4.5307 mL
10 mM	0.2265 mL	1.1327 mL	2.2654 mL
50 mM	0.0453 mL	0.2265 mL	0.4531 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

Lever JR, et al. Sigma1 and sigma2 receptor binding affinity and selectivity of SA4503 and fluoroethyl SA4503. *Synapse*. 2006 May;59(6):350-8.

Tuerxun T, et al. SA4503, a sigma-1 receptor agonist, prevents cultured cortical neurons from oxidative stress-induced cell death via suppression of MAPK pathway activation and glutamate receptor expression. *Neurosci Lett*. 2010 Jan 29;469(3):303-8.

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