

AChE/BChE-IN-23

Chemical Properties

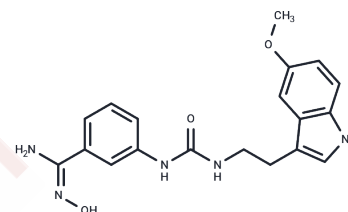
CAS No. :

Formula: C₁₉H₂₁N₅O₃

Molecular Weight: 367.4

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	AChE/BChE-IN-23 (Compound 6e) is a dual inhibitor of acetylcholinesterase and butyrylcholinesterase, exhibiting IC ₅₀ values of 0.91 μM for AChE, 1.19 μM for eqBChE, and 1.01 μM for hBChE. This compound also demonstrates antioxidant properties and inhibits the aggregation of Aβ ₁₋₄₂ and Tau proteins. Moreover, AChE/BChE-IN-23 prevents the activation of microglial cells by inhibiting the release of reactive oxygen species and mitochondrial damage. Additionally, it reduces the levels of the NLRP3 inflammasome in human microglial cells and reverses memory impairment in mice induced by scopolamine.
Targets(IC ₅₀)	Beta Amyloid, Reactive Oxygen Species, NOD-like Receptor (NLR), Microtubule Associated, Mitochondrial Metabolism, Parasite, Cholinesterase (ChE), Cytochromes P450, ROS
In vitro	AChE/BChE-IN-23 demonstrates various pharmacological activities across different concentrations and conditions. The compound induces a shift in iodide-propidium affinity toward AChE enzymes, with displacement percentages increasing at higher concentrations (5 μM, 2.06%; 10 μM, 11.78%; 20 μM, 14.47%; 50 μM, 27.53%). Additionally, AChE/BChE-IN-23 exhibits antioxidant properties, as shown by a 47.30% scavenging rate of DPPH radicals at 20 μM and an IC ₅₀ of 15.17 μM. The compound effectively inhibits the aggregation of Aβ ₁₋₄₂ at a concentration of 3.125 μM over 72 hours, and similarly inhibits Tau aggregation at 1.125 μM over the same duration. At concentrations ranging from 1 to 20 μM over 24 hours, AChE/BChE-IN-23 is non-toxic to PC-12 cells. Furthermore, at 12.5 μM over 24 hours, it prevents activation of microglia by reducing ROS release and restoring mitochondrial membrane potential. It also exerts an anti-inflammatory effect by inhibiting the activation of inflammasomes and NF-κB in microglial cells.
In vivo	AChE/BChE-IN-23 administered at 10 mg/kg through intraperitoneal injection over a 14-day period demonstrated therapeutic potential by enhancing both spatial and cognitive memory in Alzheimer's disease (AD) mice, thereby reversing scopolamine-induced Alzheimer's symptoms. At a dosage of 2000 mg/kg administered orally for the same duration, AChE/BChE-IN-23 exhibited no toxicity in Swiss albino mice and did not induce symptoms associated with acute toxicity, such as weight gain, behavioral abnormalities, convulsions, tremors, or diarrhea.

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.7218 mL	13.6091 mL	27.2183 mL
5 mM	0.5444 mL	2.7218 mL	5.4437 mL
10 mM	0.2722 mL	1.3609 mL	2.7218 mL
50 mM	0.0544 mL	0.2722 mL	0.5444 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.

Inhibitor · Natural Compounds · Compound Libraries · Recombinant Proteins

This product is for Research Use Only · Not for Human or Veterinary or Therapeutic Use

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