AChE-IN-62

Cat. No.: HY-161466

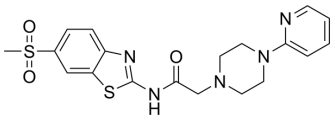
Molecular Formula: $C_{19}H_{21}N_5O_3S_2$

Molecular Weight: 431.53

Target: Cholinesterase (ChE); Amyloid-β

Pathway: Neuronal Signaling

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

AChE-IN-62 (Compound 1) is an effective mixed and selective acetylcholinesterase (AChE) inhibitor with an IC_{50} value of 0.421 μM. AChE-IN-62 exhibits excellent blood-brain barrier permeability and neuroprotective effects. Additionally, AChE-IN-62 can inhibit the aggregation of $A\beta_{1?42}$ with an IC_{50} value of 44.64 μM. AChE-IN-62 is also an effective multi-target-directed ligand (MTDL) that can be utilized in the research of Alzheimer's disease[1].

IC_{50} & Target

IC50: 0.421 μM (AChE)[1].

In Vitro

AChE-IN-62 (50 μM; 24-48 h) effectively inhibits the aggregation of $A\beta_{1-42}$ with an IC_{50} value of 44.64 μM[1].
AChE-IN-62 (5-20 μM; 24 h) demonstrates neuroprotective effects in SH-SY5Y and Neuro2A cells by ameliorating the neurotoxic effects mediated by H2O2 (200 μM; 24 h) and Okadaic acid (HY-N6785) (30 nM; 24 h)[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	SH-SY5Y, Neuro2A
Concentration:	5 μM, 10 μM, 20 μM;
Incubation Time:	24 h
Result:	Inhibited the cell death mediated by H_2O_2 (200 μM; 24 h) and Okadaic acid (HY-N6785).

In Vivo

AChE-IN-62 (Compound 1) (10-20 mg/kg; i.p.; once daily for 7 days) improves the memory decline and learning disabilities induced by scopolamine (HY-N0296) (3 mg/kg; i.p.; once daily for 7 days) in Swiss albino mice with dementia by repairing the damage to the cortex and hippocampus, thus exerting a protective effect against the harm caused by scopolamine[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Dementia model of Swiss albino mice mediated by scopolamine[1].
Dosage:	5 mg/kg, 10 mg/kg
Administration:	Intraperitoneal injection (i.p.); Once daily for 7 days. Before scopolamine (HY-N0296) treatment (3 mg/kg; i.p.; Once daily for 7 days)

Result:	Reduced the recognition ratio (T2/T1) in mice (a lower T2/T1 value indicates stronger short-term recognition memory). Significantly enhanced the step-through latency (STL) (a decrease in STL indicates impaired memory).

REFERENCES

[1]. Mishra CB, et al. Multitarget action of Benzothiazole-piperazine small hybrid molecule against Alzheimer's disease: In silico, In vitro, and In vivo investigation. Biomed Pharmacother. Published online April 1, 2024.

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