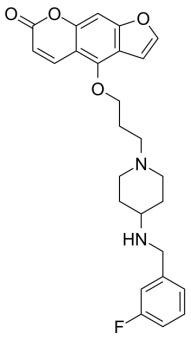
AChE/BACE1/GSK3β-IN-1

Cat. No.:	HY-151260
CAS No.:	2866066-81-9
Molecular Formula:	$C_{26}H_{27}FN_2O_4$
Molecular Weight:	450.5
Target:	Beta-secretase; Cholinesterase (ChE); GSK-3
Pathway:	Neuronal Signaling; PI3K/Akt/mTOR; Stem Cell/Wnt
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	AChE/BACE1/GSK3β-IN-1 is an orally active triple inhibitor of AChE/BACE1/GSK3β. AChE/BACE1/GSK3β-IN-1 has effective inhibitory activity against AChE, BACE1 and GSK3β with IC_{50} values of 1.0 μM, 20 μM and 15 μM, respectively. AChE/BACE1/GSK3β-IN-1 has good blood-brain barrier penetrability, suitable bioavailability. AChE/BACE1/GSK3β-IN-1 can be used for the research of Alzheimer's disease (AD)[1].

IC_{50} & Target	BACE1	AChE	GSK-3β
	20 μM (IC_{50})	1 μM (IC_{50})	15 μM (IC_{50})

In Vitro

AChE/BACE1/GSK3β-IN-1 shows effective inhibition for AChE, BACE1 and GSK3β with IC_{50} values of 1.0 μM, 20 μM and 15 μM, respectively[1].

AChE/BACE1/GSK3β-IN-1 can pass through BBB[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

AChE/BACE1/GSK3β-IN-1 (oral, 200 and 400 mg/kg, single) shows no acute toxicity and good safety profile in C57B6/J Mice[1].

AChE/BACE1/GSK3β-IN-1 (p.o., 100 mg/kg; i.v., 10 mg/kg)has good PK profiles[1].

AChE/BACE1/GSK3β-IN-1 (gavage, 2.5 mg/kg, 5 mg/kg and 10mg/kg, for 7 consecutive days) can ameliorate the impaired learning and memory in Aβ-induced AD mice[1].

AChE/BACE1/GSK3β-IN-1 inhibits the expression of ADAM17 in the cortex and significantly decreases the expressions of ADAM17 and BACE1 in AD mice[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	C57B6/J Mice[1]
Dosage:	200 and 400 mg/kg
Administration:	oral, single
Result:	Increased slightly serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST), but no significant difference. Showed no significant change in the content of blood urea nitrogen (BUN). Did not change significantly the morphology of liver and kidney tissue of mice.

Animal Model:	male Sprague-Dawley (SD) rats[1]
Dosage:	10 mg/kg and 100 mg/kg
Administration:	oral and intravenous
Result:	

parameters	100 mg/kg (p.o.)	10 mg/kg(i.v.)
C_{max}(ng/mL)	167 ± 13	2796 ± 259
AUC_{0-t}(ng/mL)	1010 ± 112	1031 ± 86
$AUC_{0-\infty}$(ng/mL*h)	1635 ± 362	1047 ± 88
$t_{1/2}$ (h)	20 ± 9	0.4 ± 0.04
Cl (L/h/kg)	63 ± 12	10 ± 1
$MRT_{0-\infty}$(h)	26 ± 11	0.3 ± 0
V_Z(L/kg)	1730 ± 387	5 ± 1
T_{max}(h)	1	0.08
F (%)	9.8	

Animal Model:	Aβ-induced AD mice[1]
Dosage:	2.5 mg/kg, 5 mg/kg and 10mg/kg
Administration:	gavage, for 7 consecutive days
Result:	Decreased the escape latency of mice. Increased the number of crossing platforms in mice in a dose-dependent trend.

REFERENCES

[1]. Nan Wang, et al. Design, Synthesis, and Biological Evaluation of Notopterol Derivatives as Triple Inhibitors of AChE/BACE1/GSK3β for the Treatment of Alzheimer's Disease. ACS Omega 2022, 7, 36, 32131−32152. Publication Date:August 30, 2022.

Caution: Product has not been fully validated for medical applications. For research use only.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA