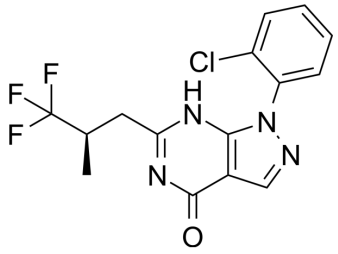
BAY 73-6691

Cat. No.:	HY-104028
CAS No.:	794568-92-6
Molecular Formula:	$C_{15}H_{12}ClF_3N_4O$
Molecular Weight:	356.73
Target:	Phosphodiesterase (PDE)
Pathway:	Metabolic Enzyme/Protease
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (280.32 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.8032 mL	14.0162 mL	28.0324 mL
5 mM	0.5606 mL	2.8032 mL	5.6065 mL
10 mM	0.2803 mL	1.4016 mL	2.8032 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (7.01 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.01 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

BAY 73-6691 ((R)-BAY 73-6691) is a potent, brain penetrant, and selective PDE9A inhibitor[1].

IC_{50} & Target

PDE9

In Vitro

The BAY 73-6691 dose-dependently alleviates cell viability loss due to $A\beta_{25-35}$ treatment. It is found that when SH-SY5Y cells are cultured by $A\beta_{25-35}$, a high degree of cell apoptosis is observed, while additional stimulation with BAY 73-6691 causes attenuation of cell apoptosis. BAY 73-6691 dose-dependently attenuates oxidative stress induced by $A\beta_{25-35}$, and BAY 73-6691 at 200 μg/mL almost neutralizes $A\beta_{25-35}$-induced oxidative damage. The BAY 73-6691 attenuates $A\beta_{25-35}$-induced increase of apoptosis cells[1].

	MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	BAY 73-6691 dose-dependently improves the acquisition performance in the $A\beta_{25-35}$-injected mice on days 7 to 10 (day 7, $F_{(5,54)}$=65.153; day 8, $F_{(5,54)}$=62.340; day 9, $F_{(5,54)}$=37.529; day 10, $F_{(5,54)}$=38.624; P<0.001). BAY 73-6691 at 3 mg/kg can almost completely abolish the prolongation of escape-latency on days 9 to 10. BAY 73-6691 dose-dependently elevates the $A\beta_{25-35}$-induced decrease of the dwell time on the 10th day post $A\beta_{25-35}$ injection (day 10, $F_{(5,54)}$=27.360, P<0.001). Results reveal that the $A\beta_{25-35}$ injection and BAY 73-6691 treatment cause no influence on the swimming speed. Treatment with BAY 73-6691 does not cause detectable alteration of spatial memory in sham mice. BAY 73-6691 alleviates $A\beta_{25-35}$-induced abnormalities of the above indices. The BAY 73-6691 causes no influence on the four indices mentioned above in sham mice. The BAY 73-6691 has no significant effect on the apoptosis of hippocampal neurons in sham mice[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	The SH-SY5Y human neuroblastoma cell line is used in this study. The cells are routinely cultured in a mixture of Dulbecco's modified Eagle's medium (DMEM)/Ham's F12 containing 10% fetal bovine serum, 2 mM L-glutamine, antibiotic and antimycotic solution under a humidified atmosphere of 5% CO_2-95% air at 37°C. The SH-SY5Y are plated in 96-well plates at 1×10^5 cells per well for the treatment with $A\beta_{25-35}$ and the BAY 73-6691. Before experiments, freshly prepared $A\beta_{25-35}$ peptide at 20 μM is added to the cells with or without exposure to different concentrations (50, 100, 150 and 200 μg/mL) of BAY 73-6691[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [1]	Male ICR mice (weighing 25 to 30 g) are used to induce the animal model of Alzheimer's disease (AD). All mice are housed in a temperature- and humidity-controlled room with a constant light-dark cycle (12 h/12 h) and are maintained on ad libitum food and water. BAY 73-6691 at different doses (0.3, 1 and 3 mg/kg) is consecutively injected (i.p.) once daily at 7:30 A.M on days 1 to 10 after injection of $A\beta_{25-35}$ (day 0). Mice are divided into six groups: (I) sham, (II) Aβ, (III) Aβ+0.3 mg/kg BAY 73-6691, (IV) Aβ+1 mg/kg BAY 73-6691, (V) Aβ+3 mg/kg BAY 73-6691 and (VI) 3 mg/kg BAY 73-6691[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- J Biomater Tissue Eng. 2021, pp. 295-301(7).

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REFERENCES

[1]. Li J, et al. Protective effects of BAY 73-6691, a selective inhibitor of phosphodiesterase 9, on amyloid-β peptides-induced oxidative stress in in-vivo and in-vitro models of Alzheimer's disease. Brain Res. 2016 Jul 1;1642:327-335.

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