Ranirestat

Cat. No.: HY-15314

CAS No.: 147254-64-6

Molecular Formula: $C_{17}H_{11}BrFN_3O_4$

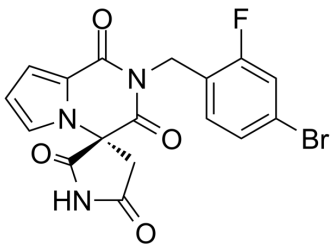
Molecular Weight: 420.19

Target: Aldose Reductase

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 : ≥ 50 mg/mL (118.99 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.3799 mL	11.8994 mL	23.7988 mL
5 mM	0.4760 mL	2.3799 mL	4.7598 mL
10 mM	0.2380 mL	1.1899 mL	2.3799 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (5.95 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (5.95 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (5.95 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Ranirestat (AS-3201) potent and orally active aldose reductase (AR) inhibitor with IC_{50}s of 11 nM and 15 nM for rat lens AR and recombinant human AR, respectively, and a K_i of 0.38 nM for recombinant human AR. Ranirestat has the potential for diabetic sensorimotor polyneuropathy treatment. Ranirestat also has a neuroprotective effect on diabetic retinas[1][2].

IC_{50} & Target

IC50: 11 nM (Rat lens aldose reductase) and 15 nM (Recombinant humanaldose reductase)[1]
Ki: 0.38 nM (Recombinant humanaldose reductase)[1]

In Vitro	Ranirestat concentration-dependently inhibits sorbitol accumulation in rat erythrocytes and sciatic nerves incubated in the high concentration (500 mg/dl) of glucose. The potency of Ranirestat inhibition of sorbitol accumulation is similar between rat erythrocytes and sciatic nerves with IC_{50} values of 0.010 μM and 0.041 μM, respectively[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Ranirestat (0.03-1.0 mg/kg; oral administration; once daily; for 3 weeks; male STD-Wistar rats) treatment dose-dependently decreases the elevated sorbitol and fructose levels in the rat sciatic nerves without affecting blood glucose level. Ranirestat also improves the STZ-induced decrease in motor nerve conduction velocity (MNCV) in a dose-dependent manner[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male STD-Wistar rats aged about (12-week-old; 260-290 g) injected with Streptozotocin (STZ)[1]
Dosage:	0.03 mg/kg, 0.1 mg/kg, 0.3 mg/kg, 1 mg/kg
Administration:	Oral administration; once daily; for 3 weeks
Result:	Dose-dependently decreased the elevated sorbitol and fructose levels in the rat sciatic nerves without affecting blood glucose level.

CUSTOMER VALIDATION

- J Transl Med. 2023 Oct 7;21(1):700.

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REFERENCES

[1]. Matsumoto T, et al. Improvement of motor nerve conduction velocity in diabetic rats requires normalization of the polyol pathway metabolites flux. J Pharmacol Sci. 2009 Feb;109(2):203-10.

[2]. Toyoda F, et al. Effect of ranirestat, a new aldose reductase inhibitor, on diabetic retinopathy in SDT rats. J Diabetes Res. 2014;2014:672590.

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