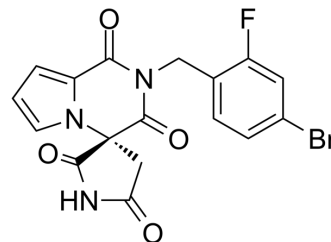


Ranirestat

Cat. No.:	HY-15314		
CAS No.:	147254-64-6		
Molecular Formula:	C ₁₇ H ₁₁ BrFN ₃ O 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.

Concentration	Mass		
	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

- 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
- 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
- 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 IC₅₀s 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]}.

IC₅₀ & 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	<p>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 IC₅₀ 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.</p>								
In Vivo	<p>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.</p> <table border="1" data-bbox="347 449 1515 758"> <tr> <td data-bbox="347 449 618 548">Animal Model:</td> <td data-bbox="618 449 1515 548">Male STD-Wistar rats aged about (12-week-old; 260-290 g) injected with Streptozotocin (STZ)^[1]</td> </tr> <tr> <td data-bbox="347 548 618 604">Dosage:</td> <td data-bbox="618 548 1515 604">0.03 mg/kg, 0.1 mg/kg, 0.3 mg/kg, 1 mg/kg</td> </tr> <tr> <td data-bbox="347 604 618 661">Administration:</td> <td data-bbox="618 604 1515 661">Oral administration; once daily; for 3 weeks</td> </tr> <tr> <td data-bbox="347 661 618 758">Result:</td> <td data-bbox="618 661 1515 758">Dose-dependently decreased the elevated sorbitol and fructose levels in the rat sciatic nerves without affecting blood glucose level.</td> </tr> </table>	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.
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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.

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

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