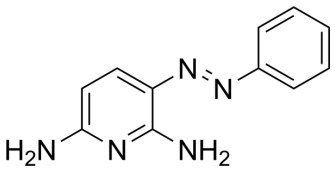
Phenazopyridine

Cat. No.:	HY-B0985A
CAS No.:	94-78-0
Molecular Formula:	$C_{11}H_{11}N_5$
Molecular Weight:	213.24
Target:	TRP Channel
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Phenazopyridine is a competitive SARM1 inhibitor, with IC_{50} 145 μM. Phenazopyridine is a TRPM8 antagonist. Phenazopyridine has a local anesthetic/analgesic effect. Phenazopyridine is used to relieve painful symptoms of conditions such as cystitis and urethritis. Phenazopyridine can promote neuronal differentiation and can also be used in the study of traumatic brain injury, peripheral neuropathy and neurodegenerative diseases[1][2][3][4][5].
IC_{50} & Target	EC50: 145 μM (SARM1)[1].
In Vitro	Phenazopyridine (10-30 μM; 12 h) increases mRNA expression of RPS23RG1 in both human SHSY5Y and mouse N2a cells[2]. Phenazopyridine (5-50 μM; 2 min) inhibits menthol induced (50 μM) TRPM8 response in a dose-dependent and reversible manner in HEK293 cells with an IC_{50} of 9.6 μM[4]. Phenazopyridine hydrochloride(3 μM; 6 weeks) can promote neuronal differentiation in human embryonic stem cells[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Phenazopyridine (15 m/kg; Intracerebroventricularly injection; Once daily for 2 weeks) improves some AD-related cognitive impairment and pathology in Alzheimer's disease (AD) APP/PS1 mice by promoting the expression of Rps23rg1[2].

Cell Differentiation Assay[5].

Cell Line:	Human ES cells
Concentration:	3 μM
Incubation Time:	6 weeks
Result:	After 10 weeks formed a neural network in the cells.

RT-PCR[5].

Cell Line:	Human ES cells
Concentration:	3 μM
Incubation Time:	6 weeks
Result:	Accelerated emergence of early neuronal markers and decreased markers of undifferentiated and non-neural cells.

Phenazopyridine (0.1-3 mg/kg; i.v.; Single dose) can inhibit mechanosensitive Aδ- fibers, but has no inhibitory effect on C-fibers in Sprague - Dawley rats[3].

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

Animal Model:	C57BL/6 mice model of Alzheimer's disease< sup>[2]
Dosage:	15 mg/kg
Administration:	Intraperitoneal injection (i.p.); Once daily for 2 weeks
Result:	Increased the RPS23RG1 levels in lungs, liver and kidneys of mice.

Animal Model:	APP/PS1 mice model of Alzheimer's disease[2]
Dosage:	15 mg/kg
Administration:	Intracerebroventricularly injection; Once daily for 2 weeks
Result:	Significantly reduced amyloid plaques. Increased protein levels of RPS23RG1, PSD-95, and phosphorylated/inactivated GSK-3β, though without affecting levels of tau, phosphorylated tau, and p35.

CUSTOMER VALIDATION

- EMBO Rep. 2022 Apr 11;e53932.
- Neuropsychopharmacology. 2022 Jul 11.

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REFERENCES

[1]. Loring H S, et al. Identification of the first noncompetitive SARM1 inhibitors[J]. Bioorganic & Medicinal Chemistry, 2020, 28(18): 115644.

[2]. Wang C, et al. Phenazopyridine promotes RPS23RG1/Rps23rg1 transcription and ameliorates Alzheimer-associated phenotypes in mice[J]. Neuropsychopharmacology, 2022, 47(12): 2042-2050.

[3]. Aizawa N, et al. Effects of phenazopyridine on rat bladder primary afferent activity, and comparison with lidocaine and acetaminophen[J]. Neurourology and Urodynamics, 2010, 29(8): 1445-1450.

[4]. Luyts N, et al. Inhibition of TRPM8 by the urinary tract analgesic drug phenazopyridine[J]. European Journal of Pharmacology, 2023, 942: 175512.

[5]. Suter, David M et al. Phenazopyridine hydrochlorideinduces and synchronizes neuronal differentiation of embryonic stem cells. Journal of cellular and molecular medicine vol. 13,9B (2009): 3517-27.

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