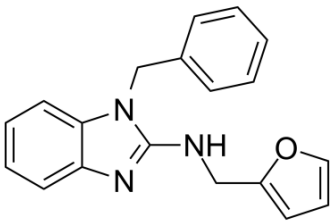
AC1903

Cat. No.:	HY-122051
CAS No.:	831234-13-0
Molecular Formula:	$C_{19}H_{17}N_3O$
Molecular Weight:	303.36
Target:	TRP Channel
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (329.64 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.2964 mL	16.4821 mL	32.9641 mL
	5 mM	0.6593 mL	3.2964 mL	6.5928 mL
	10 mM	0.3296 mL	1.6482 mL	3.2964 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 (8.24 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (8.24 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

AC1903 is a specific and selective inhibitor of TRPC5 and has podocyte-protective properties. AC1903 does no effects on TRPC4 or TRPC6 currents and shows no off-target effects in kinase profiling assays. AC1903 suppresses severe proteinuria and prevents podocyte loss in focal segmental glomerulosclerosis (FSGS) rat model[1].

IC_{50} & Target

IC50: 14.7 μM (TRPC5 current IN HEK-293 cells)[1]

In Vitro

TRPC5 is a Ca^{2+} permeable nonselective cation channel highly expressed in brain and kidney.
AC1903 (0-100 μM) blocks riluzole-activated TRPC5 whole-cell current, but fails to block carbachol (CCh)–induced TRPC4 and OAG-induced TRPC6 currents, even at high micromolar concentrations in Patch-clamp electrophysiology experiments. The ICIC$_{50}$ values of ML204 (HY-12949) (IC_{50}=13.6 μM) and AC1903 (IC_{50}=14.7 μM) are nearly equipotent in human embryonic

kidney 293 (HEK-293) cells expressing TRPC5[1].
AC1903 (30 μM) inhibits angiotensin II-induced production of reactive oxygen species (ROS) in wild-type podocytes and podocytes expressing a mutant angiotensin II type 1 (AT1) receptor that cannot be inactivated and endocytosed[1].
AC1903 (30 μM) blocks caAT1R-induced ROS generation. Increased podocyte cell death within 36 hours of caAT1R expression is observed, but AC1903 protects podocyte cells from cell death[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[1]

Cell Line:	Podocyte cells
Concentration:	30 μM
Incubation Time:	36 hours
Result:	Rescued podocyte cell death.

In Vivo

AC1903 (intraperitoneal injection; 50 mg/kg; twice per day; 7 days) significantly suppresses proteinuria as well as reduces pseudocyst formation and podocyte loss in an AT1 receptor transgenic rat model of kidney disease[1].
AC1903 (intraperitoneal injection; 50 mg/kg; twice per day; initiated on day 7 and treated for 1 week until day 14) initiatation on day 7 exhibits significant suppression of proteinuria with preserved podocyte numbers. Besides, AC1903 does not affect the mean arterial pressure (MAP) and exhibits no effect on body weight, blood urea nitrogen, or creatinine in Dahl S rats[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Hypertension-induced focal segmental glomerulosclerosis (FSGS) model in Dahl salt-sensitive rats[1]
Dosage:	50 mg/kg
Administration:	Intraperitoneal injection; 50 mg/kg; twice per day; 7 days
Result:	Inhibited the progression of proteinuric kidney disease by preserving podocytes.

Animal Model:	6-week-old Dahl S rats received 2% NaCl for 1 week with severe, progressive proteinuric disease[1]
Dosage:	50 mg/kg
Administration:	Intraperitoneal injection; 50 mg/kg; twice per day; initiated on day 7 and treated for 1 week until day 14
Result:	Decreased the rate of proteinuria when administered at the beginning of a high-salt diet and prevents progression when administered one week following initiation of a high-salt diet.

REFERENCES

[1]. Yiming Zhou, et al. A small-molecule inhibitor of TRPC5 ion channels suppresses progressive kidney disease in animal models. Science

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

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