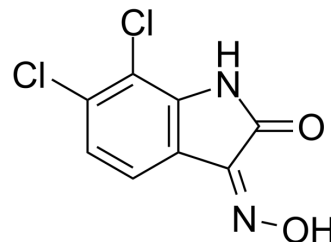


## NS309

<b>Cat. No.:</b>	HY-15416		
<b>CAS No.:</b>	18711-16-5		
<b>Molecular Formula:</b>	C <sub>8</sub> H <sub>4</sub> Cl <sub>2</sub> N <sub>2</sub> O <sub>2</sub>		
<b>Molecular Weight:</b>	231.04		
<b>Target:</b>	Potassium Channel		
<b>Pathway:</b>	Membrane Transporter/Ion Channel		
<b>Storage:</b>	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 (432.83 mM; Need ultrasonic)

Concentration	Mass		
	1 mg	5 mg	10 mg
<b>1 mM</b>	4.3283 mL	21.6413 mL	43.2826 mL
<b>5 mM</b>	0.8657 mL	4.3283 mL	8.6565 mL
<b>10 mM</b>	0.4328 mL	2.1641 mL	4.3283 mL

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

### BIOLOGICAL ACTIVITY

#### Description

NS309 is a potent and selective activator of the Ca<sup>2+</sup>-activated SK/IK potassium channels, but displays no activity at BK channels<sup>[1][2][3][4]</sup>.

#### IC<sub>50</sub> & Target

EC<sub>50</sub>: 0.62 μM (SK2)<sup>[1]</sup>, 0.3 μM (SK3)<sup>[2]</sup>, 20 nM (K<sub>Ca</sub>3.1/SK4)<sup>[3]</sup>, 600 nM (K<sub>Ca</sub>2/SK channels)<sup>[3]</sup>, 10 nM (hIK)<sup>[4]</sup>

#### In Vitro

NS309 (40 nM) activates both hSK3 and hIK channels, with the largest effect on hIK channels (8.5-fold increase in current compares to 1.9-fold increase in current for hSK3 channels)<sup>[2]</sup>.

NS309 (10 μM) significantly increases the whole cell SK currents and hyperpolarized detrusor smooth muscle (DSM) cells resting membrane potential<sup>[5]</sup>.

NS309 inhibits the spontaneous phasic contraction amplitude, force, frequency, duration and tone of isolated DSM strips in a concentration-dependent manner<sup>[5]</sup>.

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

#### In Vivo

NS309 (2 mg/kg; i.p.) protects against SCI/R in rabbits<sup>[6]</sup>.

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

Animal Model:	Adult New Zealand white rabbits (2.5-3.0 kg) <sup>[6]</sup>
Dosage:	2 mg/kg
Administration:	Intraperitoneal injection
Result:	Significantly improved neurological outcome of SCI/R challenged rabbits.

## REFERENCES

- [1]. Specific enhancement of SK channel activity selectively potentiates the afterhyperpolarizing current I(AHP) and modulates the firing properties of hippocampal pyramidal neurons.
- [2]. C Hougaard, et al. Selective positive modulation of the SK3 and SK2 subtypes of small conductance Ca<sup>2+</sup>-activated K<sup>+</sup> channels. *Br J Pharmacol.* 2007 Jul; 151(5): 655–665.
- [3]. Nichole Coleman, et al. New Positive Ca<sup>2+</sup>-Activated K<sup>+</sup> Channel Gating Modulators with Selectivity for KCa3.1. *Mol Pharmacol.* 2014 Sep; 86(3): 342–357.
- [4]. Dorte Strøbaek, et al. Activation of human IK and SK Ca<sup>2+</sup>-activated K<sup>+</sup> channels by NS309 (6,7-dichloro-1H-indole-2,3-dione 3-oxime). *Biochim Biophys Acta.* 2004 Oct 11;1665(1-2):1-5.
- [5]. Shankar P Parajuli, et al. NS309 decreases rat detrusor smooth muscle membrane potential and phasic contractions by activating SK3 channels. *Br J Pharmacol.* 2013 Apr; 168(7): 1611–1625.
- [6]. Jie Zhu, et al. Activation of SK/KCa Channel Attenuates Spinal Cord Ischemia-Reperfusion Injury via Anti-oxidative Activity and Inhibition of Mitochondrial Dysfunction in Rabbits. *Front Pharmacol.* 2019; 10: 325.

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

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