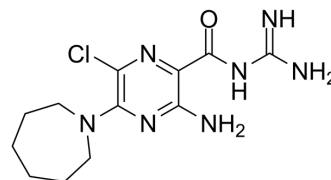


5-(N,N-Hexamethylene)-amiloride

Cat. No.:	HY-128067		
CAS No.:	1428-95-1		
Molecular Formula:	C ₁₂ H ₁₈ ClN ₇ O		
Molecular Weight:	311.77		
Target:	Sodium Channel; HIV; Apoptosis		
Pathway:	Membrane Transporter/Ion Channel; Anti-infection; Apoptosis		
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 : 100 mg/mL (320.75 mM; Need ultrasonic)				
		Solvent Concentration	Mass 1 mg	5 mg	10 mg
	Preparing Stock Solutions	1 mM	3.2075 mL	16.0375 mL	32.0749 mL
		5 mM	0.6415 mL	3.2075 mL	6.4150 mL
10 mM		0.3207 mL	1.6037 mL	3.2075 mL	
Please refer to the solubility information to select the appropriate solvent.					
In Vivo	<ol style="list-style-type: none"> Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: 2.08 mg/mL (6.67 mM); Clear solution; Need ultrasonic Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.08 mg/mL (6.67 mM); Clear solution Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.08 mg/mL (6.67 mM); Clear solution 				

BIOLOGICAL ACTIVITY

Description	5-(N,N-Hexamethylene)-amiloride (Hexamethylene amiloride) derives from an amiloride and is a potent Na ⁺ /H ⁺ exchanger inhibitor, which decreases the intracellular pH (pH _i) and induces apoptosis in leukemic cells. 5-(N,N-Hexamethylene)-amiloride (Hexamethylene amiloride) is also an inhibitor of the HIV-1 Vpu virus ion channel and inhibits mouse hepatitis virus (MHV) replication and human coronavirus 229E (HCoV229E) replication in cultured L929 cells with EC ₅₀ s of 3.91 μM and 1.34 μM, respectively ^{[1][2]} .
IC₅₀ & Target	HIV-1

In Vitro

5-(N,N-Hexamethylene)-amiloride inhibits human cardiac ion channels hERG (in CHO cells), Nav1.5 and Cav1.2 (in EHK293 cells) with of 3.3 μM , 30 μM , 8.3 μM , respectively, in electrophysiology assays^[3].

5-(N,N-Hexamethylene)-amiloride (1 μM ; 0-60 min; 37 $^{\circ}\text{C}$) exhibits microsomal stability, (1 $\mu\text{g}/\text{mL}$; 4.2 h; 37 $^{\circ}\text{C}$) shows mouse plasma stability and plasma protein binding, (20 μM ; 4 h) displays Caco-2 cell permeability, cardiac ion channel activity^[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay^[3]

Cell Line:	In vitro pharmacokinetics properties		
Concentration:	1 μM		
Incubation Time:	0-60 min		
Result:		$t_{1/2}$ (min)	CL_{int} ($\mu\text{L}/\text{min}/\text{mg}$ protein)
	Human liver microsomes in vitro	73	24
	Mouse liver microsomes in vitro	2.4	726

In Vivo

5-(N,N-Hexamethylene)-amiloride (2.5 mg/kg; i.v.; single dose) shows short half-life and lowly oral bioavailability of 4.5%^[3]. In vivo pharmacokinetics in mice or rat model^[3]

Dosage: 2.5 mg/kg Administration: Intravenous injection; single does; collected 10 min and 60 min after treatment.

	$t_{1/2}$ (h)	Plasma CL_{int} (mL/min/kg)	Plasma V_{SS} (L/kg)	Plasma $\text{AUC}_{0-\infty}$ ($\text{h}\cdot\mu\text{M}$)	B/P ratio	Blood CL (mL/min/kg)	Blood V_{SS} (L/kg)
Female Balb/c mice	0.62	86	2.0	1.5	1.5	59	1.4
Sprague Dawley rats	3.2	83.5	5.3	1.6	1.8	46.2	2.9
	% IV dose excreted in urine (0-24 h)	Renal Blood CL (mL/min/kg)	Non-Renal Blood CL (mL/min/kg)				
Sprague Dawley rats	0.5	0.2	46.0				

Note: B/P means blood-to-plasma partitioning ratio; female Balb/c mice (17-27 g, non-fasted); male Sprague Dawley rats (238-325 g, overnight-fasted).

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

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- Sci Adv. 2023 Aug 9;9(32):eadh2413.

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REFERENCES

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- [2]. Rich IN, et al. Apoptosis of leukemic cells accompanies reduction in intracellular pH after targeted inhibition of the Na(+)/H(+) exchanger. *Blood*. 2000 Feb 15;95(4):1427-34.
- [3]. Wilson L, et al. Hexamethylene amiloride blocks E protein ion channels and inhibits coronavirus replication. *Virology*. 2006 Sep 30;353(2):294-306. Epub 2006 Jul 3.
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Caution: Product has not been fully validated for medical applications. For research use only.

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