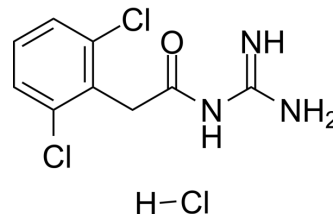


Guanfacine hydrochloride

Cat. No.:	HY-17416
CAS No.:	29110-48-3
Molecular Formula:	C ₉ H ₁₀ Cl ₃ N ₃ O
Molecular Weight:	282.55
Target:	Adrenergic Receptor
Pathway:	GPCR/G Protein; Neuronal Signaling
Storage:	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 30 mg/mL (106.18 mM)
 H₂O : 20 mg/mL (70.78 mM; Need ultrasonic)
 * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	3.5392 mL	17.6960 mL	35.3920 mL
	5 mM	0.7078 mL	3.5392 mL	7.0784 mL
	10 mM	0.3539 mL	1.7696 mL	3.5392 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 (8.85 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
Solubility: ≥ 2.5 mg/mL (8.85 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil
Solubility: ≥ 2.5 mg/mL (8.85 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Guanfacine hydrochloride is an orally active noradrenergic α_{2A} agonist and has high selective for the α_{2A} receptor subtype. Guanfacine has effects in producing hypotension and sedation. Guanfacine can be used for the research of a variety of prefrontal cortex (PFC) cognitive disorders, including tourette's syndrome and attention deficit hyperactivity disorder (ADHD)^{[1][2][3]}.

IC₅₀ & Target

α adrenergic receptor

In Vitro	<p>Guanfacine (hydrochloride) increases the delay-related neuronal firing needed for working memory on dIPFC neurons at the cellular level^{[1][2]}.</p> <p>Guanfacine improves PFC cognitive function by inhibiting the production of cAMP, closing HCN channels, and strengthening the PFC networks^{[1][2]}.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>
In Vivo	<p>Guanfacine (hydrochloride) enhances PFC working memory function in aged monkeys and improves impulse control in monkeys performing a delayed discounting task^{[1][2]}.</p> <p>Guanfacine improves cognitive performance when infused directly into the rat or monkey PFC^{[1][2]}.</p> <p>Guanfacine blocks 2A receptors in the monkey dIPFC markedly impairs working memory, behavioral inhibition and greatly reduces persistent neuronal firing^{[1][2]}.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>

CUSTOMER VALIDATION

- Patent. US20230147129A1.

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REFERENCES

- [1]. Amy F T Arnsten, et al. Guanfacine for the treatment of cognitive disorders: a century of discoveries at Yale. *Yale J Biol Med.* 2012 Mar;85(1):45-58. Epub 2012 Mar 29.
- [2]. P. A. Van Zwieten, et al. The pharmacology of centrally acting antihypertensive drugs. *Br J Clin Pharmacol.* 1983; 15(Suppl 4): 455S–462S.
- [3]. Min Wang, et al. Alpha2A-adrenoceptors strengthen working memory networks by inhibiting cAMP-HCN channel signaling in prefrontal cortex. *Cell.* 2007 Apr 20;129(2):397-410.
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Caution: Product has not been fully validated for medical applications. For research use only.

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