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### SZABO-SCANDIC HandelsgmbH

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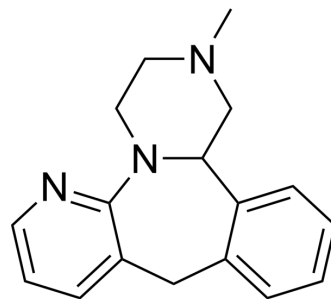
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## Mirtazapine

<b>Cat. No.:</b>	HY-B0352		
<b>CAS No.:</b>	85650-52-8		
<b>Molecular Formula:</b>	C <sub>17</sub> H <sub>19</sub> N <sub>3</sub>		
<b>Molecular Weight:</b>	265.35		
<b>Target:</b>	5-HT Receptor; Histamine Receptor; Adrenergic Receptor		
<b>Pathway:</b>	GPCR/G Protein; Neuronal Signaling; Immunology/Inflammation		
<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 : 50 mg/mL (188.43 mM; Need ultrasonic)  
 H<sub>2</sub>O : < 0.1 mg/mL (insoluble)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	3.7686 mL	18.8430 mL	37.6861 mL
	5 mM	0.7537 mL	3.7686 mL	7.5372 mL
	10 mM	0.3769 mL	1.8843 mL	3.7686 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 (9.42 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: ≥ 2.5 mg/mL (9.42 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.5 mg/mL (9.42 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Mirtazapine (Org3770) is a potent and orally active noradrenergic and specific serotonergic antidepressant (NaSSA) agent. Mirtazapine is also a 5-HT<sub>2</sub>, 5-HT<sub>3</sub>, histamine H<sub>1</sub> receptor and α<sub>2</sub>-adrenoceptor antagonist with pK<sub>i</sub> values of 8.05, 8.1, 9.3 and 6.95, respectively<sup>[1][2]</sup>.

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

5-HT <sub>3</sub> Receptor 8.1 (pKi)	5-HT <sub>2</sub> Receptor 8.05 (pKi)	H <sub>1</sub> Receptor 9.3 (pKi)	α <sub>2</sub> -adrenergic receptor 6.95 (pKi)
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<b>In Vitro</b>	<p>Mirtazapine can antagonize the adrenergic <math>\alpha</math>2-autoreceptors and <math>\alpha</math>2-heteroreceptors as well as block 5-HT<sub>2</sub> and 5-HT<sub>3</sub> receptors. Mirtazapine enhances the release of norepinephrine and 5-HT<sub>1A</sub>-mediated serotonergic transmission<sup>[1]</sup>. The cytochrome (CYP) P450 isoenzymes CYP1A2, CYP2D6, and CYP3A4 are mainly responsible for Mirtazapine's metabolism [1].</p> <p>Mirtazapine (10 <math>\mu</math>M) significantly reduces activation-induced release of cytokine/chemokine mediators from human CD14<sup>+</sup> monocytes in vitro<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>								
<b>In Vivo</b>	<p>Mirtazapine (1-20 mg/kg; intraperitoneal injection; once; C57BL/6 mice) treatment strikingly and dose-dependently inhibits Con A-induced liver injury<sup>[3]</sup>.</p> <p>Mirtazapine treatment inhibits hepatic macrophage/monocyte activation, decreases hepatic macrophage/monocyte-derived pro-inflammatory cytokine (e.g., TNF<math>\alpha</math>) and chemokine (e.g., CXCL1 and CXCL2) production, suppression of Con A-induced increases in the hepatic expression of the neutrophil relevant endothelial cell adhesion molecule ICAM-1, with the resultant significant reduction in neutrophil recruitment into the liver<sup>[3]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1" data-bbox="345 657 1515 894"> <tr> <td data-bbox="345 657 618 720">Animal Model:</td> <td data-bbox="618 657 1515 720">Male C57BL/6 mice (8-10 week old) treated with concanavalin A (Con A)<sup>[3]</sup></td> </tr> <tr> <td data-bbox="345 720 618 783">Dosage:</td> <td data-bbox="618 720 1515 783">1 mg/kg, 10 mg/kg, and 20 mg/kg</td> </tr> <tr> <td data-bbox="345 783 618 846">Administration:</td> <td data-bbox="618 783 1515 846">Intraperitoneal injection; once</td> </tr> <tr> <td data-bbox="345 846 618 894">Result:</td> <td data-bbox="618 846 1515 894">Strikingly and dose-dependently inhibited Con A-induced liver injury.</td> </tr> </table>	Animal Model:	Male C57BL/6 mice (8-10 week old) treated with concanavalin A (Con A) <sup>[3]</sup>	Dosage:	1 mg/kg, 10 mg/kg, and 20 mg/kg	Administration:	Intraperitoneal injection; once	Result:	Strikingly and dose-dependently inhibited Con A-induced liver injury.
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Result:	Strikingly and dose-dependently inhibited Con A-induced liver injury.								

## CUSTOMER VALIDATION

- Cell Commun Signal. 2023 May 25;21(1):123.

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## REFERENCES

- [1]. SA Anttila, et al. A review of the pharmacological and clinical profile of mirtazapine. CNS Drug Rev. Fall 2001;7(3):249-64.
- [2]. T H de Boer, et al. Neurochemical and autonomic pharmacological profiles of the 6-aza-analogue of mianserin, Org 3770 and its enantiomers. Neuropharmacology. 1988 Apr;27(4):399-408.
- [3]. Wagdi Almishri, et al. The Antidepressant Mirtazapine Inhibits Hepatic Innate Immune Networks to Attenuate Immune-Mediated Liver Injury in Mice. Front Immunol. 2019 Apr 12;10:803.

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

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