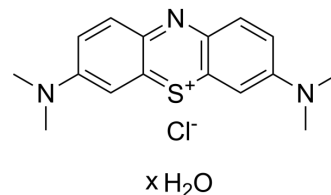


Methylene blue hydrate

Cat. No.:	HY-D0958
CAS No.:	122965-43-9
Molecular Formula:	C ₁₆ H ₁₈ N ₃ S.Cl.xH ₂ O
Target:	Guanylate Cyclase; Monoamine Oxidase; NO Synthase; Microtubule/Tubulin
Pathway:	GPCR/G Protein; Neuronal Signaling; Immunology/Inflammation; Cell Cycle/DNA Damage; Cytoskeleton
Storage:	4°C, sealed storage, away from moisture and light * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)



SOLVENT & SOLUBILITY

In Vitro	H ₂ O : 2 mg/mL (ultrasonic and warming and heat to 60°C)
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BIOLOGICAL ACTIVITY

Description Methylene blue (Basic Blue 9) hydrate is a guanylyl cyclase (sGC), monoamine oxidase A (MAO-A) and NO synthase (NOS) inhibitor. Methylene blue is a vasopressor and is often used as a dye in several medical procedures. Methylene blue hydrate through the nitric oxide synthase/guanylate cyclase signalling pathway to reduce prepulse inhibition. Methylene blue hydrate is a REDOX cycling compound and able to cross the blood-brain barrier. Methylene blue hydrate is a Tau aggregation inhibitor. Methylene blue hydrate reduces cerebral edema, attenuated microglial activation and reduced neuroinflammation^{[1][2][3]}.

In Vitro Methylene blue (Basic Blue 9) hydrate (4.5 μM; BV2 microglia) alters the immune profile of LPS-activated BV2 microglia and decreased the level of CD14, IL-1β, TNF-α, and CCL2 mRNA^[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo Methylene blue (Basic Blue 9) hydrate (50 and 100 mg/kg; i.p.; once, for 25 min; male NMRI mice) reduces absent prepulse inhibition^[1].
Methylene blue hydrate (20 and 40 mg/kg; p.o.; daily, for 6 months; CaMKIIα-tTA transactivator mice) preserves cognition in mice expressing full-length pro-aggregant human Tau^[2].
Methylene blue hydrate (2 mg/kg; i.v.; once, for 1 d; TBI-treated male BALB/c mice) reduces TBI-induced edema and neuroinflammation and reduces acute depression-like behavior^[3].
Methylene blue hydrate (2 mg/kg; i.v.; once, for 1 d; TBI-treated male BALB/c mice) reduces the percentage of inflammatory factor^[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male NMRI mice ^[1]
Dosage:	50 and 100 mg/kg
Administration:	Intraperitoneal injection; once, for 25 minutes

Result:	Reduced the prepulse inhibition and reduced the increase in locomotor activity caused by phencyclidine (PCP).
Animal Model:	CaMKII α -tTA transactivator mice ^[2]
Dosage:	20 and 40 mg/kg
Administration:	Oral administration; daily, for 6 months
Result:	Inhibited Tau aggregation in CaMKII α -tTA transactivator mice.
Animal Model:	TBI-treated male BALB/c mice ^[3]
Dosage:	2 mg/kg
Administration:	Intravenous injection; once, for 1 day
Result:	Decreased the level of CD14, IL-1 β , TNF- α , and CCL2 mRNA.
Animal Model:	TBI-treated male BALB/c mice ^[3]
Dosage:	2 mg/kg
Administration:	Intravenous injection; once, for 1 day
Result:	Reduced the percentage of myeloid (CD11b+/GR1+) cells, reduced IL-1 β and enhanced IL-10 expression in microglia.

CUSTOMER VALIDATION

- Biomaterials. 2022: 121988.
- Theranostics. 2021 Oct 17;11(20):9884-9903.
- Redox Biol. 2020 Sep;36:101601.
- Phytother Res. 2023 Feb 14.
- Exp Ther Med. 2019 Nov;18(5):4049-4057.

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REFERENCES

- [1]. Klamer D, et, al. Phencyclidine-induced behaviour in mice prevented by methylene blue. Basic Clin Pharmacol Toxicol. 2004 Feb;94(2):65-72.
- [2]. Hochgräfe K, et, al. Preventive methylene blue treatment preserves cognition in mice expressing full-length pro-aggregant human Tau. Acta Neuropathol Commun. 2015 May 10;3:25.
- [3]. Fenn AM, et, al. Methylene blue attenuates traumatic brain injury-associated neuroinflammation and acute depressive-like behavior in mice. J Neurotrauma. 2015 Jan 15;32(2):127-38.

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

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