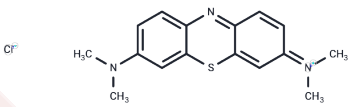
Data Sheet (Cat.No.T6888)

TargetMol

Methylene Blue

Chemical Properties



CAS No. : 61-73-4

Formula: C16H18ClN3S

Molecular Weight: 319.85

Storage: Keep away from direct sunlight
Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	Methylene Blue (Tetramethylthionine chloride) (IC50 of 1.9 μM) inhibits tau filament formation. And it inhibits soluble guanylyl cyclase. It is also used as a dye in chromoendoscopy.
Targets(IC50)	Microtubule Associated,NO Synthase,Parasite,Guanylate cyclase,Monoamine Oxidase
In vitro	MB could inactivate nitric oxide directly by generating superoxide anions, it may inhibit the action of nitric oxide synthase itself. In addition to interfering with the nitric oxide-cyclic guanosine monophosphate pathway, there are MB directly activating calcium-dependent potassium channels and enhancing the release of noradrenaline from intracellular stores.
In vivo	Methylene Blue decreases C-GMP and vascular smooth muscle relaxation by inhibiting guanylate cyclase. Pharmacokinetic studies in rodents showed that MB injects by intravascular resulting in a rapid and extensive accumulation of this drug in the central nervous system (CNS). When MB is injected intravenously, it selectively gathers in parathyroid glands, therefore is easy for the identification of structures during surgery.
Kinase Assay	Isolated Integrin Binding Assays.:Purified integrin (1 μg/mL; 4℃) is used to coat 96-well microtitre plates, which are then blocked with bovine serum albumin (BSA) (3% in 1 mM CaCl2, 1 mM MgCl2,10 pM MnCl2, 100 mM NaC1,50 mM Tris-hydroxymethyl-aminomethane; pH 7.4), and incubated (3 h at 30 ℃) with biotinylated ligands (1 pg/mL in binding buffer: 0.1% BSA, 1 mM CaCl2,1 mM MgCl2, 10 μM MnCl2, 100 mM NaCl, 50 mM Tris-hydroxymethyl-aminomethane; pH 7.4) in the presence or absence of serially diluted peptides. After washing (3×5 min with binding buffer), the bound biotinylated ligand is detected with alkaline-phosphatase conjugated goat anti-biotin antibodies (1 μg/mL; 1 h, 37℃), using p-nitrophenyl phosphate as chromogen. Cyclo (-RGDfK) binding in the absence of competitor is defined as 100% signal; binding to blocked wells in the absence of integrin is defined as 0%. Concentrations of Cyclo (-RGDfK) required for 50% inhibition of signal (IC50 values) are estimated graphically.
Cell Research	Immature neuroblasts, isolated from the newborn rat subventricular zone, differentiate into γ-aminobutyric acid-mediated neurons are exposed at the sixth day in vitro to MB (10 μM) for 2h. Assess the survival and dendritic arbor architecture of these cells 48h after this treatment paradigm.

Animal Research	MB (5 or 50 mg/kg) diluted in normal saline were injected intraarterially into Sprague-Dawley male rats over the 30s.

Solubility Information

Solubility	H2O: 3.2 mg/mL (10 mM),Sonication is recommended. DMSO: 1 mg/mL (3.13 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.1265 mL	15.6323 mL	31.2647 mL
5 mM	0.6253 mL	3.1265 mL	6.2529 mL
10 mM	0.3126 mL	1.5632 mL	3.1265 mL
50 mM	0.0625 mL	0.3126 mL	0.6253 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Vutskits L, et al. Anesthesiology. 108(4):684-692.
Fan Z, Tian Y, Chen Z, et al. Blocking interaction between SHP2 and PD-1 denotes a novel opportunity for developing PD-1 inhibitors. EMBO Molecular Medicine. 2020: e11571
Hochgräfe K, et al. Acta Neuropathol Commun. 2015 May 10;3:25.
Masaki E, et al. Anesth Analg. 1999, 89(2):484-489.
Ginimuge PR, et al. J Anaesthesiol Clin Pharmacol. 2010, 26(4):517-520.
Fan Z, Tian Y, Chen Z, et al. Blocking interaction between SHP2 and PD-1 denotes a novel opportunity for developing PD-1 inhibitors[J]. EMBO Molecular Medicine. 2020: e11571.