# Direct Blue 1

**Cat. No.:** HY-D0939

**CAS No.:** 2610-05-1

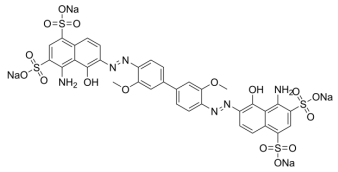
**Molecular Formula:** $C_{34}H_{24}N_6Na_4O_{16}S_4$

**Molecular Weight:** 992.8

**Target:** Amyloid-β; NF-κB

**Pathway:** Neuronal Signaling; NF-κB

**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**

DMSO : 125 mg/mL (125.91 mM; Need ultrasonic)
$H_2O$ : 2.08 mg/mL (2.10 mM; Need ultrasonic)

| Preparing Stock Solutions | Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|---|
| | 1 mM | 1.0073 mL | 5.0363 mL | 10.0725 mL |
| | 5 mM | 0.2015 mL | 1.0073 mL | 2.0145 mL |
| | 10 mM | 0.1007 mL | 0.5036 mL | 1.0073 mL |

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**

1. Add each solvent one by one: PBS
   Solubility: 5 mg/mL (5.04 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 4.17 mg/mL (4.20 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 4.17 mg/mL (4.20 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description**

Direct Blue 1 (Chicago Sky Blue 6B) is a complex dye for background autofluorescence in immunofluorescence histochemistry. Direct Blue 1 is a potent and competitive VGLUT inhibitor. Direct Blue 1 can inhibit the Aβ-binding small molecule PrP ligand. Direct Blue 1 has anti-inflammatory activity[1][2][3][4][5][6].

**In Vitro**

Direct Blue 1 (0.1, 1, 10 μM, 9 days) can bind α-synuclein and inhibit its aggregation, thus blocking the proliferation of α-synuclein between SH-SY5Y cells[4].
Direct Blue 1 (5, 10, 20 μM, 48 h) inhibits RANKL-induced osteoclasts and bone resorption in vitro by inhibiting NF-κB

signaling and promoting proteasome-mediated MIF degradation[5].

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

Cell Cytotoxicity Assay[5]

| | |
|---|---|
| Cell Line: | BMMs |
| Concentration: | 0.75, 1.5, 3.125, 6.25, 12.5, 25, 50, 100, 200 μM |
| Incubation Time: | 48, 96 h |
| Result: | Exhibited no cytotoxic effect at concentrations of 0-50 μM. |

Western Blot Analysis[5]

| | |
|---|---|
| Cell Line: | BMMs |
| Concentration: | 5, 10, 20 μM |
| Incubation Time: | 0, 1, 3, 5 days |
| Result: | Attenuated the protein expression of both c-Fos and NFATc1.<br>Decreased the protein expression of MIF. |

**In Vivo**

Direct Blue 1 (2 or 8 mg/kg, subcutaneously, for 4 weeks) alleviates inflammatory bone destruction and osteoporosis induced by titanium particles in mice[5].

Direct Blue 1 (7.5 μg, intraventricular injection) alleviates methamphetamine-induced hyperactivity and behavioral sensitization in mice[6].

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

| | |
|---|---|
| Animal Model: | OVX-induced osteoporosis mice model[5] |
| Dosage: | 2, 8 m/kg |
| Administration: | s.c. |
| Result: | Inhibited the elevated osteoclast formation and bone resorption. |

| | |
|---|---|
| Animal Model: | METH-induced hyperactivity in mice[6] |
| Dosage: | 7.5 μg |
| Administration: | i.c.v. |
| Result: | Reduced acute hyperactivity and attenuated expression of sensitization. |

## REFERENCES


[1]. Min JO, et al. Chicago sky blue 6B inhibits α-synuclein aggregation and propagation. Mol Brain. 2022 Mar 28;15(1):27.

[2]. Jin K, et al. Chicago sky blue 6B (CSB6B), an allosteric inhibitor of macrophage migration inhibitory factor (MIF), suppresses osteoclastogenesis and promotes osteogenesis through the inhibition of the NF-κB signaling pathway. Biochem Pharmacol. 2021 Oct;192:114734.

[3]. He Z, et al. Chicago sky blue 6B, a vesicular glutamate transporters inhibitor, attenuates methamphetamine-induced hyperactivity and behavioral sensitization in mice. Behav Brain Res. 2013 Feb 15;239:172-6.

[4]. Lodha N, Poojary SA. A Novel Contrast Stain for the Rapid Diagnosis of Pityriasis Versicolor: A Comparison of Chicago Sky Blue 6B Stain, Potassium Hydroxide Mount

and Culture. Indian J Dermatol. 2015;60(4):340-344.

[5]. Yu G, et al. The antinociceptive effects of intracerebroventricular administration of Chicago sky blue 6B, a vesicular glutamate transporter inhibitor. Behav Pharmacol. 2013;24(8):653-658.

[6]. Risse E, et al. Identification of a Compound That Disrupts Binding of Amyloid-β to the Prion Protein Using a Novel Fluorescence-based Assay. J Biol Chem. 2015;290(27):17020-17028.



Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA