

Product Data Sheet

Product Name: Paraquat (dichloride)

Cat. No.: GB60361

Chemical Properties

Cas. No. 1910-42-5

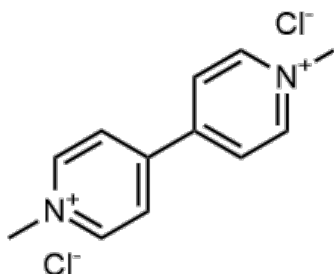
Formula $C_{12}H_{14}Cl_2N_2$ M.Wt 257.16

Solubility DMSO : 1.82 mg/mL (7.08 mM; ultrasonic and warming and heat to 60°C) Storage 2-8°C, sealed storage, away from moisture

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

Cell lines BV-2 microglial cells

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Preparation Method The MTT assay was used for assessment of cell viability. Before treatment with Paraquat (dichloride) and inhibitors, cells were placed in serum-free DMEM. Cells were incubated with Paraquat (dichloride) and other agents for different periods up to 48 hours. After various treatments, culture medium was removed and 1mg/mL MTT dissolved in DMEM was added to the cells and incubated for 2 hours.

Reaction Conditions 50μM; 24h

Applications Paraquat (dichloride) induced morphological changes, ROS production, and cytotoxicity in BV-2 microglial cells.

Animal experiment [2]:

Animal models Kunming mice

Preparation Method Kunming mice (aged 7 weeks, 20-23g) were used in this study. The mice were adapted to their surroundings for 1 week before the experiment was initiated. Animals were housed in a room that was maintained at a constant temperature (18-22°C) and humidity (40-50%). Animals were assigned to four groups randomly: a control group (0mg/kg) and three paraquat treatment groups with each group comprising 20 mice. The doses and time regimen were designed based on the previous researches and the LD₅₀ (110-150mg/kg in rats) of Paraquat (dichloride). The doses of Paraquat (dichloride) were 0.89mg/kg, 2.67mg/kg, 8mg/kg body weight, respectively. Paraquat (dichloride) was administered orally in doses of 0.1mL/10g body weight, respectively, once a day and for 28 consecutive days.

Dosage form 0.89mg/kg, 2.67mg/kg, 8mg/kg; po; 28d

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Applications Paraquat (dichloride) is toxic to the hippocampus of mice.

References:

- [1]. Miller RL, Sun GY, Sun AY. Cytotoxicity of paraquat in microglial cells: involvement of PKC α -and ERK1/2-dependent NADPH oxidase. Brain research. 2007 Sep 5; 1167: 129-139.
- [2]. Chen Q, Niu Y, Zhang R, et al. The toxic influence of paraquat on hippocampus of mice: involvement of oxidative stress. Neurotoxicology. 2010 Jun 1; 31(3): 310-316.

Background

Paraquat (dichloride) is a non-selective herbicide widely used in agriculture [1]. Paraquat (dichloride) destroys plant cell structures by inducing reactive oxygen species during photosynthesis [2]. Paraquat (dichloride) is highly toxic to humans and animals and can cause fatal pulmonary fibrosis [3].

In BV-2 microglial cells, Paraquat (dichloride) (50 μ M; 24h) induced morphological changes, ROS production, and cytotoxicity in BV-2 microglial cells [4]. In cerebellar granule cells, exposure to relatively low concentrations of Paraquat (dichloride) (5 μ M; 24h) resulted in apoptotic cell death, decreased mitochondrial cytochrome c content, increased proteolytic activation and caspase-3 activity, and DNA fragmentation [5]. In pulmonary microvascular endothelial cells, Paraquat (dichloride) (0.1mM, 0.5mM, 2mM; 72h) caused a time-dependent increase in lactate dehydrogenase release [6]. In cortical cells, exposed to Paraquat (dichloride) (10 μ M; 72h) often had shrunken cell bodies with condensed nuclei and sparse or collapsed dendrites [7].

In kunming mice, Paraquat (dichloride) (0.89mg/kg, 2.67mg/kg, 8mg/kg; po; 28d) has toxic effects on mouse hippocampal tissue, and its toxic mechanism may be related to mitochondrial damage of hippocampal neurons caused by oxidative stress [8]. In swiss-webster mice, Paraquat (dichloride) (30 mg/kg; ip; single injection) reduces the concentrations of water-soluble antioxidants and reduced glutathione in the liver and lipid-soluble antioxidants in the lung [9]. In C57BL/6 mice, long-term repeated oral administration of Paraquat (dichloride) (10mg/kg; ig; 4 months) can selectively impair the nigrostriatal dopaminergic system of mice [10].

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

References:

- [1]. Lock EA, Wilks MF. Paraquat. In Hayes' Handbook of Pesticide Toxicology 2010 Jan 1 (pp. 1771-1827). Academic Press.
- [2]. Lascano R, Munoz N, Robert G, et al. Paraquat: an oxidative stress inducer. Herbicides-properties, synthesis and control of weeds. 2012 Jan 13; 135-148.
- [3]. Clark DG, McElligott TF, Hurst EW. The toxicity of paraquat. Occupational and Environmental Medicine. 1966 Apr 1; 23(2): 126-132.
- [4]. Miller RL, Sun GY, Sun AY. Cytotoxicity of paraquat in microglial cells: involvement of PKC δ -and ERK1/2-dependent NADPH oxidase. Brain research. 2007 Sep 5; 1167: 129-139.
- [5]. Gonzalez-Polo RA, Rodriguez-Martín A, Moran JM, et al. Paraquat-induced apoptotic cell death in cerebellar granule cells. Brain research. 2004 Jun 18; 1011(2): 170-176.
- [6]. Tsukamoto M, Tampo Y, Sawada M, et al. Paraquat-Induced Membrane Dysfunction in Pulmonary Microvascular Endothelial Cells. Pharmacology & toxicology. 2000 Mar; 86(3): 102-109.
- [7]. Kim SJ, Kim JE, Moon IS. Paraquat induces apoptosis of cultured rat cortical cells. Molecules and cells. 2004 Feb 1; 17(1): 102-107.
- [8]. Chen Q, Niu Y, Zhang R, et al. The toxic influence of paraquat on hippocampus of mice: involvement of oxidative stress. Neurotoxicology. 2010 Jun 1; 31(3): 310-316.
- [9]. Bus JS, Cagen SZ, Olgaard M, Gibson JE. A mechanism of paraquat toxicity in mice and rats. Toxicology and applied pharmacology. 1976 Mar 1; 35(3): 501-513.
- [10]. Ren JP, Zhao YW, Sun XJ. Toxic influence of chronic oral administration of paraquat on nigrostriatal dopaminergic neurons in C57BL/6 mice. Chinese medical journal. 2009 Oct 1; 122(19): 2366-2371.

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

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com

Address: 10292 Central Ave. #205, Montclair, CA, USA