Product Data Sheet

Product Name: BL-918
Cat. No.: GC39481

Chemical Properties

Cas. No.	2101517-69-3		
SMILES	O=C(NC1=CC=C(F)C=C1F)[C@H](NC(NC2=CC(C(F)(F)F)=CC(C(F)(F)F)=C2)=S)C3=CC=CC=C3		
Formula	$C_{23}H_{15}F_8N_3OS$	M.Wt	533.44
Solubility	DMSO: ≥ 250 mg/mL (468.66 mM)	Storage	Store at -20°C
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.		

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

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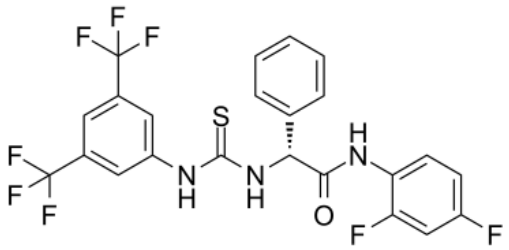
Structure



Protocol

Cell experiment [1]:

Cell lines	SH-SY5Y cells (human neuroblastoma cell line)
Preparation Method	SH-SY5Y cells were maintained in Dulbecco's modified Eagle's medium (DMEM) supplemented with 10% fetal bovine serum (FBS) at 37°C, 5% CO_2. SH-SY5Y cells were treated with BL-918 (20μM) together with 6-hydroxydopamine (6-OHDA; 50μM) or 1-methyl-4-phenylpyridinium (MPP^+; 1mM) for 24 hours.

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Reaction Conditions	20μM, 24h
Applications	BL-918 treatment significantly attenuated 6-OHDA- and MPP^+-induced neurotoxicity and protected mitochondrial function. BL-918 promotes AMBRA1 recruitment, facilitated HUWE1-mediated mitophagy in SH-SY5Y cells.

Animal experiment [2]:

Animal models	WT C57BL/6 mice and Pink1-deficient (Pink1 $^{-/-}$) mice
Preparation Method	Mice treated with 40mg/kg BL-918 by oral gavage once daily from day 1–12 and intraperitoneally injected with 25mg/kg MPTP once daily from day 3–7. Behavioral tests (rotarod and pole test) were performed. Immunoblotting and immunofluorescence were used to detect tyrosine hydroxylase (TH) and dopamine transporter (DAT) in substantia nigra and striatum.
Dosage form	40mg/kg; oral gavage; once daily for 12 days
Applications	BL-918 treatment restored MPTP-induced impairment of motor function in WT mice but not in Pink1$^{-/-}$ mice. BL-918 mitigated the reduction of TH protein level in substantia nigra and alleviated the loss of TH-positive and DAT-positive dopaminergic neurons in substantia nigra, as well as the reduction of TH-positive fiber density in striatum, in a PINK1-dependent manner.

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References:
[1] Lee C, Kim DY, Kim SM, et al. HUWE1 regulates mitophagy to protect dopaminergic neurons from 6-OHDA- and MPP^+-induced neurotoxicity. Cell Biol Toxicol. 2026 Feb 5;42(1):34.
[2] Wang Y, Luo S, Su H, et al. BL-918 activates PINK1/Parkin signaling pathway to ameliorate the progression of Parkinson's disease. J Biol Chem. 2024 Aug;300(8):107543.

Background

BL-918 is an activator of UNC-51-like kinase 1 (ULK1; EC_{50}=24.14nM). BL-918 can induce cytoprotective autophagy by targeting the ULK complex, while increasing ULK1 phosphorylation at Ser317 and Ser555 and decreasing phosphorylation at Ser757 to activate the autophagy pathway. BL-918 can be used in research related to Parkinson's disease and amyotrophic lateral sclerosis[1-4].

In vitro, BL-918 (0.5–5μM) was used to treat SH-SY5Y cells for 6 hours. BL-918 significantly enhanced cell viability and induced cytoprotective autophagy[5]. BL-918 (20μM) was co-treated with 6-OHDA (50μM) or 1-methyl-4-phenylpyridinium (1mM) in SH-SY5Y cells for 24 hours. BL-918 significantly attenuated neurotoxicity and protected mitochondrial function[6].

In vivo, BL-918 (40 or 80mg/kg; twice daily by oral gavage) was administered to SODG93A mice for 46 weeks. BL-918 dose-dependently extended lifespan and improved motor function[7]. BL-918 (40mg/kg; once daily orally) was used to treat an MPTP (25mg/kg; once daily intraperitoneal injection; days 3–7)-induced Parkinson's disease mouse model for 12 days. BL-918 significantly improved motor function and alleviated the loss of dopaminergic neurons, and these effects were PINK1-dependent[8].

References:
[1] Yang J, Wu Q, Li Y, et al. BL-918 alleviates oxidative stress in rats after subarachnoid hemorrhage by promoting mitophagy through the ULK1/PINK1/Parkin pathway. Free Radic Biol Med. 2024 Nov 1;224:846-861.
[2] Anjum F, Hawsawi N, Almalki AA, et al. Exploring bioactive phytochemicals as ULK1 activators for enhancing cytoprotective autophagy in amyotrophic lateral sclerosis. Front Pharmacol. 2025 Sep 4;16:1661744.
[3] Zhang L, He C, Liu Z, et al. Benfotiamine, a Lipid-Soluble Derivative of Vitamin B1, Ameliorates

the Carbohydrate Overload-Induced Mitochondrial Dysfunction in Fish Megalobrama amblycephala by Triggering the ULK1-Mediated Mitophagy. Aquac Nutr. 2025 May 1;2025:7688386.
[4] Gong Y, Deng Z, Wu J, et al. Ferrodoxin 1 (FDX1) drives paclitaxel resistance in ovarian cancer via copper metabolism and ULK1/ATG13-mediated autophagy: overcome by pH/ROS-responsive PPD/PDP@si-FDX1 nanomicelles. J Exp Clin Cancer Res. 2026 Apr 23;45(1):104.
[5] Ouyang L, Zhang L, Zhang S, et al. Small-Molecule Activator of UNC-51-Like Kinase 1 (ULK1) That Induces Cytoprotective Autophagy for Parkinson's Disease Treatment. J Med Chem. 2018 Apr 12;61(7):2776-2792.
[6] Lee C, Kim DY, Kim SM, et al. HUWE1 regulates mitophagy to protect dopaminergic neurons from 6-OHDA- and MPP^+-induced neurotoxicity. Cell Biol Toxicol. 2026 Feb 5;42(1):34.
[7] Liu W, Zhu SO, Guo YL, et al. BL-918, a small-molecule activator of ULK1, induces cytoprotective autophagy for amyotrophic lateral sclerosis therapy. Acta Pharmacol Sin. 2023 Mar;44(3):524-537.
[8] Wang Y, Luo S, Su H, et al. BL-918 activates PINK1/Parkin signaling pathway to ameliorate the progression of Parkinson's disease. J Biol Chem. 2024 Aug;300(8):107543.