MSDC 0160

Cat. No.: HY-100550

CAS No.: 146062-49-9

Molecular Formula: $C_{19}H_{18}N_2O_4S$

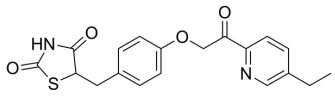
Molecular Weight: 370.42

Target: Insulin Receptor; Mitochondrial Metabolism

Pathway: Protein Tyrosine Kinase/RTK; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	1 year
	-20°C	6 months



SOLVENT & SOLUBILITY

In Vitro

DMSO : 33.33 mg/mL (89.98 mM; Need ultrasonic)

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.6996 mL	13.4982 mL	26.9964 mL
5 mM	0.5399 mL	2.6996 mL	5.3993 mL
10 mM	0.2700 mL	1.3498 mL	2.6996 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (6.75 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (6.75 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.75 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

MSDC 0160 (Mitoglitazone) is a mitochondrial target of thiazolidinediones (mTOT)-modulating insulin sensitizer and a modulator of mitochondrial pyruvate carrier (MPC). MSDC 0160 is a thiazolidinedione (TZD) with antidiabetic and neuroprotective activities. MSDC 0160 has the potential for Alzheimer's disease[1][2].

In Vitro

MSDC 0160 (Mitoglitazone; 1-50 μM; for 24 hours) significantly decreases phosphorylation of mTOR at 20 and 50 μM[1].
?MSDC 0160 acts as insulin sensitizers without activating PPARγ[1].
?MSDC 0160 (10 μM; pretreatment 1 hour) prevents the MPP^+ (10 μM)-induced loss of both tyrosine hydroxylase (TH)-

immunoreactive differentiated Lund human mesencephalic (LUHMES) cells[1].
?MSDC 0160 (10 or 100 μM) prevents the loss of GFP-fluorescent dopaminergic neurons induced by MPP^+ (0.75 mM) in nematodes[1].
?MSDC 0160 (10-20 μM) in conbination with IGF-1 prevents the loss of insulin content and maintains insulin secretion[1].
?MSDC 0160 (1-50 μM) treatment maintains human β-cell phenotype[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	Human islets
Concentration:	1, 10, 20, 50 μM
Incubation Time:	For 24 hours
Result:	Significantly decreased Phosphorylation of mTOR at 20 and 50 μM.

In Vivo

MSDC 0160 (Mitoglitazone; 30 mg/kg; oral gavage; daily; for 7 days) improves locomotor behavior, increases survival of nigral dopaminergic neurons, boosts striatal dopamine levels, and reduces neuroinflammation in 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)-treated mice[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Ten- to 12-week-old male C57BL/6J mice weighing 24 to 28 g[2]
Dosage:	30 mg/kg
Administration:	Oral gavage; daily; for 7 days
Result:	Improved locomotor behavior, increased survival of nigral dopaminergic neurons, boosted striatal dopamine levels, and reduced neuroinflammation.

CUSTOMER VALIDATION

- Immunology. 2023 Jan 28.
- eNeuro. 2023 Mar 9;ENEURO.0353-22.2023.

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REFERENCES

[1]. Rohatgi N, et al. Novel insulin sensitizer modulates nutrient sensing pathways and maintains β-cell phenotype in human islets. PLoS One. 2013 May 1;8(5):e62012.

[2]. Ghosh A, et al. Mitochondrial pyruvate carrier regulates autophagy, inflammation, and neurodegeneration inexperimental models of Parkinson's disease. Sci Transl Med. 2016 Dec 7;8(368):368ra174.

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