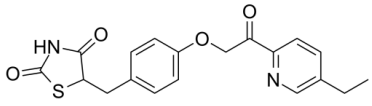
Data Sheet

Product Name:	MSDC 0160
Cat. No.:	CS-6405
CAS No.:	146062-49-9
Molecular Formula:	C19H18N2O4S
Molecular Weight:	370.42
Target:	Insulin Receptor; Mitochondrial Metabolism
Pathway:	Metabolic Enzyme/Protease; Protein Tyrosine Kinase/RTK
Solubility:	DMSO : ≥ 30 mg/mL (80.99 mM)



BIOLOGICAL ACTIVITY:

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]. **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].

PROTOCOL (Extracted from published papers and Only for reference)

Animal Administration[1] MSDC-0160 is dissolved in 1% methylcellulose with 0.01% Tween 80. Ten- to 12-week-old male C57BL/6J mice weighing 24 to 28 g are housed under standard conditions: constant temperature (22°C), humidity (relative, 30%), and a 12-hour light/dark cycle, with free access to food and water. Procedures are performed during daylight hours. Mice are administered MSDC-0160 (30 mg/kg) by oral gavage beginning 24 hours before MPTP treatment. Next, mice receive five consecutive doses of MPTP via intraperitoneal injection at 25 mg/kg per day along with coadministration of MSDC-0160, followed by 6 days of MSDC-0160 treatment. MSDC-0160 is dissolved in 1% methylcellulose with 0.01% Tween 80. Control mice receive vehicle treatment (1% methylcellulose with 0.01% Tween 80). In the modest pathology stage, mice are administered MSDC-0160 (30 mg/kg per day) by oral gavage for 7 days starting 3 days after MPTP (25 mg/kg per day) treatment. Seven days after MPTP treatment, mice are euthanized, and tissues are processed for further evaluation. Mice are randomized to the experimental groups.

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.

CAIndexNames:

2,4-Thiazolidinedione, 5-[[4-[2-(5-ethyl-2-pyridinyl)-2-oxoethoxy]phenyl]methyl]-

SMILES:

O=C(N1)SC(CC2=CC=C(OCC(C3=NC=C(CC)C=C3)=O)C=C2)C1=O

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