Revision 1

#55199 Store at RT

Mitochondrial Fusion Promoter M1

25 mg

Cell Signaling TECHNOLOGY®

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Background

Mitochondrial Fusion Promoter M1 is a hydrazone compound that promotes mitochondrial fusion in fragmented mitochondria (1). In a study of human induced pluripotent stem cells (iPSCs), M1 fused fragmented mitochondria and promoted the differentiation of iPSCs into an early mesodermal cardiac lineage (2). Pancreatic β cells treated with soluble cholesterol triggers increased total cholesterol accumulation, diminished cellular respiration, and compromised glucose-stimulated insulin secretion. Treatment of these cells with M1 prevents cholesterol-mediated suppression of cellular respiration and increases glucose-stimulated insulin secretion (3). M1 is also seen to protect against brain damage in rats with induced cardiac ischemia/reperfusion (I/R) injury (4) and against diabetic cardiomyopathy in a rat model of diabetes (5). Treatment of donor microvascular endothelial cells with M1 and the fission inhibitor Mdivi1 promotes mitochondrial fusion and reduces recipient T cell responses, which may lead to improved cardiac transplant survival (6).

Molecular Formula

$C_{14}H_{10}Cl_4N_2O$

Molecular Weight

364.1 g/mol

Purity

>98%

CAS

219315-22-7

Solubility

Soluble in DMSO at 40 mg/mL or ethanol at 6 mg/mL.

Storage

Store lyophilized at room temperature, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, store at -20ºC and use within 2 months to prevent loss of potency. *Aliquot to avoid multiple freeze/thaw cycles*.

Directions for Use

Mitochondrial Fusion Promoter M1 is supplied as a lyophilized powder. For a 15 mM stock, reconstitute 5 mg of powder in 0.92 mL of DMSO. Working concentrations and length of treatment can vary depending on the desired effect.

Background References

1. Trotta, A.P. and Chipuk, J.E. (2017) *Cell Mol Life Sci* 74, 1999-2017.
2. Lees, J.G. et al. (2019) *Stem Cells Int* 2019, 6380135.
3. Asalla, S. et al. (2016) *Sci Rep* 6, 27513.
4. Surinkaew, P. et al. (2020) *J Alzheimers Dis* 77, 993-1003.
5. Ding, M. et al. (2020) *Acta Physiol (Oxf)* 229, e13428.
6. Tran, D.T. et al. (2022) *Am J Transplant* 22, 386-401.

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