Product data sheet



MedKoo Cat#: 522364				
Name: Mardepodect free base				
CAS: 898562-94-2 (free base)				
Chemical Formula: C ₂₅ H ₂₀ N ₄ O				
Exact Mass: 392.1637				
Molecular Weight: 392.462				
Product supplied as:	Powder			
Purity (by HPLC):	$\geq 98\%$			
Shipping conditions	Ambient temperature			
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.			
	In solvent: -80°C 3 months; -20°C 2 weeks.			



1. Product description:

Mardepodect, also known as PF-2545920, is a phosphodiesterase inhibitor selective for the PDE10A subtype, which is potentially useful for the treatment of schizophrenia. Phosphodiesterase 10A (PDE10A) is highly expressed in striatal medium spiny neurons of both the direct and indirect output pathways. PDE10A inhibitors have shown behavioral effects in rodent models that predict antipsychotic efficacy. PF-2545920 is active in a range of antipsychotic models, antagonizing apomorphine-induced climbing in mice, inhibiting conditioned avoidance responding in both rats and mice, and blocking N-methyl-D-aspartate antagonist-induced deficits in prepulse inhibition of acoustic startle response in rats, while improving baseline sensory gating in mice.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

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Solvent	Max Conc. mg/mL	Max Conc. mM		
DMF	30.0	76.44		
DMF:PBS (pH 7.2)	0.05	0.13		
(1:20)				
DMSO	30.0	76.44		
Ethanol	0.5	1.27		

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.55 mL	12.74 mL	25.48 mL
5 mM	0.51 mL	2.55 mL	5.10 mL
10 mM	0.26 mL	1.27 mL	2.55 mL
50 mM	0.05 mL	0.26 mL	0.51 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study In vitro study

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1. Yang YT, Yan B, Li YH, Guo LN, Wang WW, Liu LJ, Yu HG, Diao H. Phosphodiesterase 10A inhibitor PF-2545920 as a prospective agent for the clinical promotion of sperm motility. Asian J Androl. 2023 Apr 4. doi: 10.4103/aja2022117. Epub ahead of print. PMID: 37026191.

2. Borneman RM, Gavin E, Musiyenko A, Richter W, Lee KJ, Crossman DK, Andrews JF, Wilhite AM, McClellan S, Aragon I, Ward AB, Chen X, Keeton AB, Berry K, Piazza GA, Scalici JM, da Silva LM. Phosphodiesterase 10A (PDE10A) as a novel target to suppress β -catenin and RAS signaling in epithelial ovarian cancer. J Ovarian Res. 2022 Nov 2;15(1):120. doi: 10.1186/s13048-022-01050-9. PMID: 36324187; PMCID: PMC9632086.

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In vivo study

1. Kim DY, Park JS, Leem YH, Park JE, Kim HS. The Potent PDE10A Inhibitor MP-10 (PF-2545920) Suppresses Microglial Activation in LPS-Induced Neuroinflammation and MPTP-Induced Parkinson's Disease Mouse Models. J Neuroimmune Pharmacol. 2021 Jun;16(2):470-482. doi: 10.1007/s11481-020-09943-6. Epub 2020 Jul 15. PMID: 32671618.

2. Zhang Y, Gao B, Zheng F, Lu S, Li Y, Xiong Y, Yang Q, Yang Y, Fu P, Xiao F, Wang X. The Phosphodiesterase 10A Inhibitor PF-2545920 Enhances Hippocampal Excitability and Seizure Activity Involving the Upregulation of GluA1 and NR2A in Post-synaptic Densities. Front Mol Neurosci. 2017 Apr 7;10:100. doi: 10.3389/fnmol.2017.00100. PMID: 28439226; PMCID: PMC5383654.

7. Bioactivity

Biological target:

Mardepodect (PF-2545920) is a potent, orally active and selective PDE10A inhibitor with an IC50 of 0.37 nM.

In vitro activity

This study examined the PDE10A inhibitor PF-2545920 to compare its ability to promote sperm motility with that of pentoxifylline and sildenafil. PF-2545920 elevated the percentage of motile spermatozoa compared to the control, pentoxifylline, and sildenafil groups at 10 μ mol l-1 (P < 0.01). It is less toxic to GC-2spd mouse spermatocytes cells and spermatozoa and causes fewer spontaneous acrosomal reactions (P < 0.05). PF-2545920 also increased mitochondrial membrane potential (P < 0.001) and altered intracellular calcium (P < 0.05) in a dose-dependent manner, including increasing sperm hyaluronic acid penetrating ability (P < 0.05).

Reference: Asian J Androl. 2023 Apr 4. https://pubmed.ncbi.nlm.nih.gov/37026191/

In vivo activity

This study examined the effect of MP-10 in neuroinflammation and PD mouse models. The anti-inflammatory effect of MP-10 was confirmed in vivo. Specifically, MP-10 inhibited microglial activation and proinflammatory gene expression in the brains of LPS-injected mice. Moreover, MP-10 rescued behavioral deficits and recovered dopaminergic neuronal cell death in the brains of 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine-induced PD mice. MP-10 also reduced microglial activation in this PD mouse model.

Reference: J Neuroimmune Pharmacol. 2021 Jun;16(2):470-482. https://pubmed.ncbi.nlm.nih.gov/32671618/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.