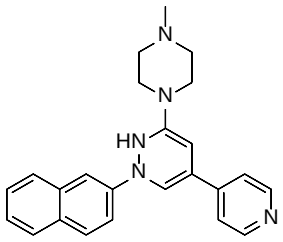
Product data sheet

MedKoo Cat#: 534847 Name: MW-150 CAS: 1628502-91-9 Chemical Formula: $C_{24}H_{25}N_5$ Exact Mass: 383.211 Molecular Weight: 383.499	
Product supplied as:	Powder
Purity (by HPLC):	≥ 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:

MW-150 is an inhibitor of p38α MAPK (Ki = 101 nM). It is 6-, 10-, and 14-fold selective for p38α MAPK over the serine/threonine protein kinase NLK, p38β MAPK, and p38δ MAPK, respectively, and is also selective over the enzymatically normal mutant p38α MAPKT106M. It inhibits p38α MAPK phosphorylation of the endogenous substrate MAPK-activated protein kinase 2 (MK2) in LPS-activated glia in a concentration-dependent manner and decreases the levels of IL-1β in the same cells. MW-150 (2.5 mg/kg per day, i.p.) reduces the number of errors made in the spatial reference memory version of the radial arm water maze in aged amyloid precursor protein/presenilin 1 (APP/PS1) knock-in mice as a model of Alzheimer's disease.

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

Solvent	Max Conc. mg/mL	Max Conc. mM
DMF	15.0	39.11
DMF:PBS (pH 7.2) (1:3)	0.25	0.65
DMSO	20.5	53.46
Ethanol	1.0	2.62

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.62 mL	13.11 mL	26.21 mL
5 mM	0.52 mL	2.62 mL	5.24 mL
10 mM	0.26 mL	1.31 mL	2.62 mL
50 mM	0.05 mL	0.26 mL	0.52 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

1. Roy SM, Grum-Tokars VL, Schavocky JP, Saeed F, Staniszewski A, Teich AF, Arancio O, Bachstetter AD, Webster SJ, Van Eldik LJ, Minasov G, Anderson WF, Pelletier JC, Watterson DM. Targeting human central nervous system protein kinases: An isoform selective p38αMAPK inhibitor that attenuates disease progression in Alzheimer's disease mouse models. ACS Chem Neurosci. 2015 Apr 15;6(4):666-80. doi: 10.1021/acschemneuro.5b00002. Epub 2015 Feb 23. PMID: 25676389; PMCID: PMC4404319.

In vivo study

1. Robson MJ, Quinlan MA, Margolis KG, Gajewski-Kurdziel PA, Veenstra-VanderWeele J, Gershon MD, Watterson DM, Blakely RD. p38α MAPK signaling drives pharmacologically reversible brain and gastrointestinal phenotypes in the SERT Ala56 mouse. Proc

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Natl Acad Sci U S A. 2018 Oct 23;115(43):E10245-E10254. doi: 10.1073/pnas.1809137115. Epub 2018 Oct 8. PMID: 30297392; PMCID: PMC6205438.
2. Rutigliano G, Stazi M, Arancio O, Watterson DM, Origlia N. An isoform-selective p38α mitogen-activated protein kinase inhibitor rescues early entorhinal cortex dysfunctions in a mouse model of Alzheimer's disease. Neurobiol Aging. 2018 Oct;70:86-91. doi: 10.1016/j.neurobiolaging.2018.06.006. Epub 2018 Jun 12. PMID: 30007168; PMCID: PMC6119125.

7. Bioactivity

Biological target:

MW150 (MW01-18-150SRM) is a selective, CNS penetrant, and orally active inhibitor of p38α MAPK with a K_i of 101 nM.

In vitro activity

As summarized herein, a final optimization by synthesis and screening yielded MW150 that has improved HLM stability ($T_{1/2}$ > 60 min) and oral bioavailability (>50%) as well as an incrementally improved p38αMAPK inhibition activity with retention of target selectivity, safety, and brain penetrance. MW150, containing a R_3 piperazine substituent and R_6 2-naphthyl substituent, represents the best in class for metabolic and bioavailability potential with retention of isoform selective p38αMAPK IC_{50} activity.

Reference: ACS Chem Neurosci. 2015 Apr 15;6(4):666-80. https://pubmed.ncbi.nlm.nih.gov/25676389/

In vivo activity

Strikingly, 1-week treatment of adult SERT Ala56 mice with MW150, a selective p38α MAPK inhibitor, normalized hippocampal 5-HT clearance, CNS 5-HT_{1A} and 5-$HT_{2A/2C}$ receptor sensitivities, social interactions, and colonic motility. Conditional elimination of p38α MAPK in 5-HT neurons of SERT Ala56 mice restored 5-HT_{1A} and 5-$HT_{2A/2C}$ receptor sensitivities as well as social interactions, mirroring effects of MW150.

Reference: Proc Natl Acad Sci U S A. 2018 Oct 23;115(43):E10245-E10254. https://pubmed.ncbi.nlm.nih.gov/30297392/

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.