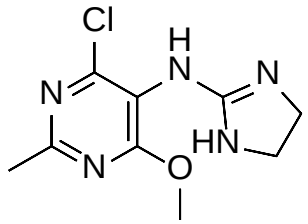
Product data sheet

MedKoo Cat#: 584133 Name: Moxonidine CAS: 75438-57-2 (free base) Chemical Formula: $C_9H_{12}ClN_5O$ Exact Mass: 241.073 Molecular Weight: 241.679	
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:
Moxonidine is a centrally acting antihypertensive drug that is selective agonist at the imidazoline receptor subtype 1 (I1). This receptor subtype is found in both the rostral ventro-lateral pressor and ventromedial depressor areas of the medulla oblongata. Moxonidine therefore causes a decrease in sympathetic nervous system activity and a decrease in blood pressure. Moxonidine may also promote sodium excretion, improve insulin resistance and glucose tolerance and protect against hypertensive target organ damage, such as kidney disease and cardiac hypertrophy.

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	20.0	82.75
DMSO	21.33	88.27
Ethanol	6.0	24.83
PBS (pH 7.2)	2.0	8.28

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.14 mL	20.69 mL	41.38 mL
5 mM	0.83 mL	4.14 mL	8.28 mL
10 mM	0.41 mL	2.07 mL	4.14 mL
50 mM	0.08 mL	0.41 mL	0.83 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. Wang Y, Nguyen DT, Anesi J, Alramahi A, Witting PK, Chai Z, Khan AW, Kelly J, Denton KM, Golledge J. Moxonidine Increases Uptake of Oxidised Low-Density Lipoprotein in Cultured Vascular Smooth Muscle Cells and Inhibits Atherosclerosis in Apolipoprotein E-Deficient Mice. Int J Mol Sci. 2023 Feb 14;24(4):3857. doi: 10.3390/ijms24043857. PMID: 36835270; PMCID: PMC9960795.
2. Zhou X, He D, Yan X, Chen X, Li R, Zhang G, Wang J. Moxonidine inhibits excitatory inputs to airway vagal preganglionic neurons via activation of both α2-adrenoceptors and imidazoline I1 receptors. Brain Res. 2020 Apr 1;1732:146695. doi: 10.1016/j.brainres.2020.146695. Epub 2020 Jan 31. PMID: 32007398.

In vivo study

1. El-Sayed SS, Rezq S, Alsemeh AE, Mahmoud MF. Moxonidine ameliorates cardiac injury in rats with metabolic syndrome by regulating autophagy. Life Sci. 2023 Jan 1;312:121210. doi: 10.1016/j.lfs.2022.121210. Epub 2022 Nov 18. PMID: 36410408.

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2. Zhang W, Li X, Liu Y, Chen H, Gong J. Activation of imidazoline I1 receptor by moxonidine regulates the progression of liver fibrosis in the Nrf2-dependent pathway. Biomed Pharmacother. 2017 Jun;90:821-834. doi: 10.1016/j.biopha.2017.04.025. Epub 2017 Apr 20. PMID: 28437886.

7. Bioactivity

Biological target:

Moxonidine (BDF5895) is a selective agonist at the imidazoline receptor subtype 1, used as antihypertensive agent.

In vitro activity

To induce MetS (metabolic syndrome), rats were fed 3 % salt in their diet and 10 % fructose in their drinking water for 12 weeks. MetS-rats were given either moxonidine (6 mg/kg/day, gavage), efaroxan (I1R antagonist, 0.6 mg/kg/day, i.p), both treatments, or vehicles for the last two weeks. Moxonidine significantly ameliorated MetS-induced metabolic and hemodynamic derangements and the associated cardiac pathology. Moxonidine restored NR4A2 and p53 myocardial levels and enhanced autophagic flux via modulating SQSTM1/p62, LC3, and Beclin-1.

Reference: Life Sci. 2023 Jan 1;312:121210. https://pubmed.ncbi.nlm.nih.gov/36410408/

In vivo activity

In this study, airway vagal preganglionic neurons (AVPNs) were retrogradely labeled in neonatal rats from the intrathoracic trachea; retrogradely labeled AVPNs in the external formation of the nucleus ambiguus (NA) were identified in rhythmically active medullary slices using whole-cell patch-clamp techniques; and the effects of moxonidine on the spontaneous excitatory postsynaptic currents (EPSCs) of AVPNs were observed at synaptic level. The results show that moxonidine (10 μmol·L-1) significantly inhibited the frequency of spontaneous EPSCs in both inspiratory-activated and inspiratory-inhibited AVPNs.

Reference: Life Sci. 2023 Jan 1;312:121210. https://pubmed.ncbi.nlm.nih.gov/32007398/

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.