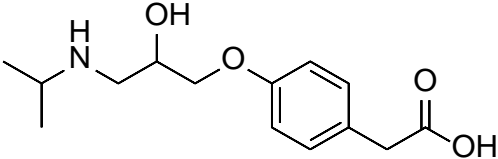


Product data sheet



MedKoo Cat#: 573541 Name: Metoprolol acid CAS: 56392-14-4 Chemical Formula: C ₁₄ H ₂₁ NO ₄ Exact Mass: 267.1471 Molecular Weight: 267.325	
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:

Metoprolol acid is a pharmacologically inactive urinary metoprolol metabolite.

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
TBD	TBD	TBD

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.74 mL	18.70 mL	37.41 mL
5 mM	0.75 mL	3.74 mL	7.48 mL
10 mM	0.37 mL	1.87 mL	3.74 mL
50 mM	0.08 mL	0.37 mL	0.75 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

- Allen LB, Mirnics K. Metoprolol Inhibits Developmental Brain Sterol Biosynthesis in Mice. *Biomolecules*. 2022 Aug 31;12(9):1211. doi: 10.3390/biom12091211. PMID: 36139049; PMCID: PMC9496459.
- Četojević-Simin DD, Armačević SJ, Šojić DV, Abramović BF. Toxicity assessment of metoprolol and its photodegradation mixtures obtained by using different type of TiO₂ catalysts in the mammalian cell lines. *Sci Total Environ*. 2013 Oct 1;463-464:968-74. doi: 10.1016/j.scitotenv.2013.06.083. Epub 2013 Jul 17. PMID: 23872187.

In vivo study

- Ulleryd MA, Bernberg E, Yang LJ, Bergström GM, Johansson ME. Metoprolol reduces proinflammatory cytokines and atherosclerosis in ApoE^{-/-} mice. *Biomed Res Int*. 2014;2014:548783. doi: 10.1155/2014/548783. Epub 2014 Jul 8. PMID: 25105129; PMCID: PMC4109227.
- Wang D, Chen Y, Jiang J, Zhou A, Pan L, Chen Q, Qian Y, Chu M, Chen C. Carvedilol has stronger anti-inflammation and anti-virus effects than metoprolol in murine model with coxsackievirus B3-induced viral myocarditis. *Gene*. 2014 Sep 1;547(2):195-201. doi: 10.1016/j.gene.2014.06.003. Epub 2014 Jun 4. PMID: 24905653.

7. Bioactivity

Biological target:

Metoprolol acid is a pharmacologically inactive urinary metoprolol metabolite.

Product data sheet



In vitro activity

Using LC-MS/MS, this study investigated the effects of six commonly used beta-blockers on brain sterol biosynthesis in vitro using cell lines. Two beta-blockers, metoprolol (MTP) and nebivolol, showed extreme elevations of the highly oxidizable cholesterol precursor 7-dehydrocholesterol (7-DHC) in vitro across multiple cell lines.

Reference: Biomolecules. 2022 Aug 31;12(9):1211. <https://pubmed.ncbi.nlm.nih.gov/36139049/>

In vivo activity

The aim of the present study was to evaluate the effect of metoprolol on development of atherosclerosis in ApoE(-/-) mice and investigate its effect on the release of proinflammatory cytokines. Male ApoE(-/-) mice were treated with metoprolol (2.5 mg/kg/h) or saline for 11 weeks via osmotic minipumps. Metoprolol significantly reduced atherosclerotic plaque area in thoracic aorta ($P < 0.05$ versus Control). This study found that a moderate dose of metoprolol significantly reduced atherosclerotic plaque area in thoracic aorta of ApoE(-/-) mice.

Reference: Biomed Res Int. 2014;2014:548783. <https://pubmed.ncbi.nlm.nih.gov/25105129/>

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.