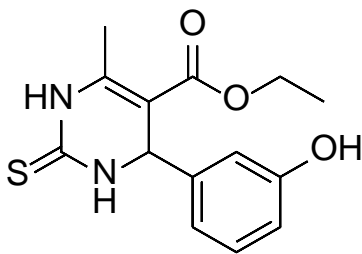


Product data sheet



MedKoo Cat#: 406240 Name: Monastrol CAS: 329689-23-8 Chemical Formula: C ₁₄ H ₁₆ N ₂ O ₃ S Exact Mass: 292.0882 Molecular Weight: 292.353		
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:

Monastrol is a kinesin Eg5 inhibitor. Induction of apoptosis by monastrol is independent of the spindle checkpoint. Monastrol binds to the KSP-ADP complex, forming a KSP-ADP- monastrol ternary complex, which cannot bind to microtubules productively and cannot undergo further ATP-driven conformational changes.

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	68.41
DMF:PBS (pH 7.2) (1:1)	0.5	1.71
DMSO	35.0	119.72
Ethanol	29.5	100.91

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.42 mL	17.10 mL	34.21 mL
5 mM	0.68 mL	3.42 mL	6.84 mL
10 mM	0.34 mL	1.71 mL	3.42 mL
50 mM	0.07 mL	0.34 mL	0.68 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. Cochran JC, Gatial JE 3rd, Kapoor TM, Gilbert SP. Monastrol inhibition of the mitotic kinesin Eg5. J Biol Chem. 2005 Apr 1;280(13):12658-67. doi: 10.1074/jbc.M413140200. Epub 2005 Jan 23. PMID: 15665380; PMCID: PMC1356610.
2. Mayer TU, Kapoor TM, Haggarty SJ, King RW, Schreiber SL, Mitchison TJ. Small molecule inhibitor of mitotic spindle bipolarity identified in a phenotype-based screen. Science. 1999 Oct 29;286(5441):971-4. doi: 10.1126/science.286.5441.971. PMID: 10542155.

In vivo study

1. Yoon SY, Choi JE, Huh JW, Hwang O, Lee HS, Hong HN, Kim D. Monastrol, a selective inhibitor of the mitotic kinesin Eg5, induces a distinctive growth profile of dendrites and axons in primary cortical neuron cultures. Cell Motil Cytoskeleton. 2005 Apr;60(4):181-90. doi: 10.1002/cm.20057. PMID: 15751098.
2. Mailhes JB, Mastromatteo C, Fuseler JW. Transient exposure to the Eg5 kinesin inhibitor monastrol leads to syntelic orientation of chromosomes and aneuploidy in mouse oocytes. Mutat Res. 2004 Apr 11;559(1-2):153-67. doi: 10.1016/j.mrgentox.2004.01.001. PMID: 15066583.

Product data sheet



7. Bioactivity

Biological target:

Monastrol is a potent and cell-permeable inhibitor of the mitotic kinesin Eg5 with an IC₅₀ value of 14 µM.

In vitro activity

Monastrol is a small, cell-permeable molecule that arrests cells in mitosis by specifically inhibiting Eg5, a member of the Kinesin-5 family. Monastrol promotes a dramatic decrease in the observed rate of Eg5 association with microtubules, and ADP release is slowed without trapping the Mt.Eg5.ADP intermediate.

Reference: J Biol Chem. 2005 Apr 1;280(13):12658-67. <https://pubmed.ncbi.nlm.nih.gov/15665380/>

In vivo activity

Monastrol retarded rat oocyte maturation by significantly ($P < 0.05$) decreasing germinal vesicle breakdown and increasing the frequencies of arrested metaphase I oocytes. Also, significant ($P < 0.05$) increases in the frequencies of monoastrol spindles and chromosome displacement from the metaphase plate were found in oocytes during meiosis I. In metaphase II oocytes, monastrol significantly ($P < 0.05$) increased the frequencies of premature centromere separation and aneuploidy.

Reference: Mutat Res. 2004 Apr 11;559(1-2):153-67. <https://pubmed.ncbi.nlm.nih.gov/15066583/>

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.