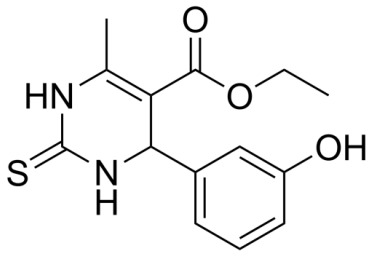
Data Sheet

Product Name:	Monastrol
Cat. No.:	CS-6183
CAS No.:	329689-23-8
Molecular Formula:	$C_{14}H_{16}N_2O_3S$
Molecular Weight:	292.35
Target:	Apoptosis; Kinesin
Pathway:	Apoptosis; Cell Cycle/DNA Damage; Cytoskeleton
Solubility:	DMSO : ≥ 33 mg/mL (112.88 mM)



BIOLOGICAL ACTIVITY:

Monastrol is a potent and cell-permeable inhibitor of the mitotic **kinesin Eg5** with an **IC_{50}** value of 14 μM. IC50 & Target: IC50: 14 μM (Eg5)[3] ***In Vitro:*** Monastrol is a small, cell-permeable molecule that arrests cells in mitosis by specifically inhibiting Eg5, a member of the Kinesin-5 family. Monastrol treatment of dividing cells results in spindle collapse and cell cycle arrest with a monoastral spindle, which is similar to the phenotype observed when Eg5 is inhibited by anti-Eg5 antibodies[1]. Monastrol is an allosteric inhibitor of the mitotic kinesin Eg5 that exhibits an antiproliferative effect against several cell lines. Monastrol treatment can decrease cell viability in MCF-7 tumor cells. Real-time cell growth kinetic analysis showed a decrease in the proliferation of MCF-7 cells exposed to monastrol [2].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: [2]The cytotoxicity assay is performed with MTT. Cells are seeded in 96-well culture plates (5000 cells/well) and incubated for 24 h for stabilization. After this period, the following treatments are administered for 24 and 48 h: vehicle control (0.5 % DMSO); 1 μM doxorubicin and monastrol at 5, 25, 50, 75, and 100 μM. After each time of treatment, the medium is withdrawn, serum-free media containing 0.5 mg/mL MTT salt is added and incubated for 4 h, and formazan crystal products are diluted[2].

References:

[1]. Cochran JC, et al. Monastrol inhibition of the mitotic kinesin Eg5. J BiolChem. 2005 Apr 1;280(13):12658-67.

[2]. Marques LA, et al. Antiproliferative activity of monastrol in human adenocarcinoma (MCF-7) and non-tumor (HB4a) breast cells. Naunyn Schmiedebergs Arch Pharmacol. 2016 Dec;389(12):1279-1288.

[3]. Mayer TU, et al. Small molecule inhibitor of mitotic spindle bipolarity identified in a phenotype-based screen. Science. 1999 Oct 29;286(5441):971-4.

CAIndexNames:

5-Pyrimidinecarboxylic acid, 1,2,3,4-tetrahydro-4-(3-hydroxyphenyl)-6-methyl-2-thioxo-, ethyl ester

SMILES:

O=C(C1=C(C)NC(NC1C2=CC=CC(O)=C2)=S)OCC

Caution: Product has not been fully validated for medical applications. For research use only.

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