

Product data sheet



MedKoo Cat#: 530379 Name: H-89 Dihydrochloride CAS: 130964-39-5 (2HCl) Chemical Formula: C ₂₀ H ₂₂ BrCl ₂ N ₃ O ₂ S Molecular Weight: 519.279		
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:

H-89 is a specific adenylyl cyclase inhibitor (DDA) and a cyclic AMP-dependent protein kinase inhibitor. H-89 blocks the action of equine growth hormone on in vitro maturation of equine oocytes. H-89 decreases the gain of excitation-contraction coupling and attenuates calcium sparks in the absence of beta-adrenergic stimulation. H-89 potentiates adipogenesis in 3T3-L1 cells by activating insulin signaling independently of protein kinase A.

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	30.0	57.77
DMF:PBS (pH 7.2) (1:1)	0.5	0.96
DMSO	69.23	133.32
Ethanol	0.15	0.29
Water	7.33	14.11

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.93 mL	9.63 mL	19.26 mL
5 mM	0.39 mL	1.93 mL	3.85 mL
10 mM	0.19 mL	0.96 mL	1.93 mL
50 mM	0.04 mL	0.19 mL	0.39 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

- Muñoz KJ, Wang K, Sheehan LM, Tan M, Sütterlin C. The Small Molecule H89 Inhibits Chlamydia Inclusion Growth and Production of Infectious Progeny. *Infect Immun.* 2021 Jun 16;89(7):e0072920. doi: 10.1128/IAI.00729-20. Epub 2021 Jun 16. PMID: 33820812; PMCID: PMC8373235.
- Melick CH, Jewell JL. Small molecule H89 renders the phosphorylation of S6K1 and AKT resistant to mTOR inhibitors. *Biochem J.* 2020 May 29;477(10):1847-1863. doi: 10.1042/BCJ20190958. PMID: 32347294; PMCID: PMC7261416.

In vivo study

- Dumortier C, Charlet R, Bettaieb A, Jawhara S. H89 Treatment Reduces Intestinal Inflammation and Candida albicans Overgrowth in Mice. *Microorganisms.* 2020 Dec 19;8(12):2039. doi: 10.3390/microorganisms8122039. PMID: 33352792; PMCID: PMC7766101.

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2. Lyu Y, Xu W, Zhang J, Li M, Xiang Q, Li Y, Tan T, Ou Q, Zhang J, Tian H, Xu JY, Jin C, Gao F, Wang J, Li W, Rong A, Lu L, Xu GT. Protein Kinase A Inhibitor H89 Attenuates Experimental Proliferative Vitreoretinopathy. *Invest Ophthalmol Vis Sci.* 2020 Feb 7;61(2):1. doi: 10.1167/iops.61.2.1. PMID: 32031573; PMCID: PMC7325625.

7. Bioactivity

Biological target:

H-89 dihydrochloride is a potent and selective inhibitor of protein kinase A (PKA) with an IC₅₀ of 48 nM.

In vitro activity

Mouse embryonic fibroblast (MEF), human bronchial epithelial (hBE), human bone osteosarcoma epithelial (U2OS), hepatocellular carcinoma (HepG2), human pancreatic carcinoma (MIA PaCa-2), and mouse myoblast (C2C12) cells were also resistant to rapamycin and Torin1 treatment when pretreated with H89. Taken together, H89 enhances S6K1 and AKT phosphorylation. Moreover, H89 can prevent rapamycin and Torin1 from inhibiting S6K1 and AKT phosphorylation.

Reference: *Biochem J.* 2020 May 29;477(10):1847-1863. <https://pubmed.ncbi.nlm.nih.gov/32347294/>

In vivo activity

In the presence of DSS (D) and DCa (DSS + *C. albicans*), mice showed a significant increase in inflammatory parameters. Although the inflammatory parameters increased during the development of colitis and overgrowth of *C. albicans*, H89 treatment significantly reduced the clinical and histological scores for inflammation when compared to those in the D or DCa groups (Figure 5A,B).

Reference: *Microorganisms.* 2020 Dec 19;8(12):2039. <https://pubmed.ncbi.nlm.nih.gov/33352792/>

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.