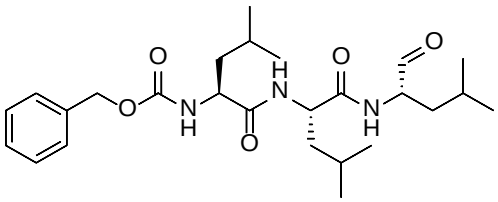
Product data sheet

MedKoo Cat#: 406304 Name: MG-132 CAS: 133407-82-6 Chemical Formula: $C_{26}H_{41}N_3O_5$ Exact Mass: 475.3046 Molecular Weight: 475.63	
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:

MG132 is a specific, potent, reversible, and cell-permeable proteasome inhibitor (Ki = 4 nM) . It reduces the degradation of ubiquitin-conjugated proteins in mammalian cells and permeable strains of yeast by the 26S complex without affecting its ATPase or isopeptidase activities. MG132 activates c-Jun N-terminal kinase (JNK1), which initiates apoptosis. MG132 also inhibits NF-κB activation with an IC50 of 3 μM and prevents β-secretase cleavage. MG-132 induces MCPIP1 expression; induces C6 glioma cell apoptosis via oxidative stress; induces AIF nuclear translocation through down-regulation of ERK and Akt/mTOR pathway.

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	63.07
DMSO	59.19	124.44
Ethanol	36.28	76.28

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.10 mL	10.51 mL	21.03 mL
5 mM	0.42 mL	2.10 mL	4.21 mL
10 mM	0.21 mL	1.05 mL	2.10 mL
50 mM	0.04 mL	0.21 mL	0.42 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. Fan WH, Hou Y, Meng FK, Wang XF, Luo YN, Ge PF. Proteasome inhibitor MG-132 induces C6 glioma cell apoptosis via oxidative stress. Acta Pharmacol Sin. 2011 May;32(5):619-25. doi: 10.1038/aps.2011.16. Epub 2011 Apr 18. PMID: 21499287; PMCID: PMC4002511.
2. Lee CS, Han ES, Park ES, Bang H. Inhibition of MG132-induced mitochondrial dysfunction and cell death in PC12 cells by 3-morpholinosydnonimine. Brain Res. 2005 Mar 2;1036(1-2):18-26. doi: 10.1016/j.brainres.2004.12.036. PMID: 15725397.

In vivo study

1. Shi H, Yang D, Huo Z, Li Y, Guo W, Zhang S. MG132 protects against lung injury following brain death in rats. Exp Ther Med. 2022 Sep 23;24(5):687. doi: 10.3892/etm.2022.11623. PMID: 36277154; PMCID: PMC9535331.
2. Zhang XM, Li YC, Chen P, Ye S, Xie SH, Xia WJ, Yang JH. MG-132 attenuates cardiac deterioration of viral myocarditis via AMPK pathway. Biomed Pharmacother. 2020 Jun;126:110091. doi: 10.1016/j.biopha.2020.110091. Epub 2020 Apr 8. PMID: 32278272.

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7. Bioactivity

Biological target:

MG-132 (Z-Leu-Leu-Leu-al) is a potent proteasome and calpain inhibitor with IC_{50}s of 100 nM and 1.2 μM.

In vitro activity

MG-132 inhibited C6 glioma cell proliferation in a time- and dose-dependent manner (the IC(50) value at 24 h was 18.5 μmol/L). MG-132 (18.5 μmol/L) suppressed the proteasome activity by about 70% at 3 h. It induced apoptosis via down-regulation of antiapoptotic proteins Bcl-2 and XIAP, up-regulation of pro-apoptotic protein Bax and caspase-3, and production of cleaved C-terminal 85 kDa PARP).

Reference: Acta Pharmacol Sin. 2011 May;32(5):619-25. https://pubmed.ncbi.nlm.nih.gov/21499287/

In vivo activity

Acute viral myocarditis models were established by intraperitoneal inoculation of CVB3 in male BALB/c mice. MG-132 improved hemodynamics and inhibited the structural remodeling of the ventricle in mice with myocarditis, while BML largely blunted these effects. TUNEL staining and immunochemistry suggested that MG-132 exerts anti-apoptotic and anti-inflammatory effects against CVB3-induced myocardial injuries.

Reference: Biomed Pharmacother. 2020 Jun;126:110091. https://pubmed.ncbi.nlm.nih.gov/32278272/

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.