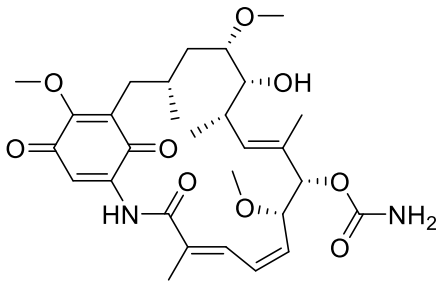
Product data sheet

MedKoo Cat#: 205922 Name: Geldanamycin CAS#: 30562-34-6 Chemical Formula: $C_{29}H_{40}N_2O_9$ Exact Mass: 560.27338 Molecular Weight: 560.6359	
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:
Geldanamycin is a benzoquinone ansamycin antibiotic that binds to Hsp90 (Heat Shock Protein 90) and inhibits its function. HSP90 client proteins play important roles in the regulation of the cell cycle, cell growth, cell survival, apoptosis, angiogenesis and oncogenesis. Hsp90-geldanamycin complex. PDB 1yet Geldanamycin induces the degradation of proteins that are mutated in tumor cells such as v-Src, Bcr-Abl and p53 preferentially over their normal cellular counterparts. This effect is mediated via HSP90. Despite its potent antitumor potential, geldanamycin presents several major drawbacks as a drug candidate (namely, hepatotoxicity) that have led to the development of geldanamycin analogues.

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
DMSO	18.0	32.11

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.78 mL	8.92 mL	17.84 mL
5 mM	0.36 mL	1.78 mL	3.57 mL
10 mM	0.18 mL	0.89 mL	1.78 mL
50 mM	0.04 mL	0.18 mL	0.36 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. Pezzulo AA, Tudas RA, Stewart CG, Buonfiglio LGV, Lindsay BD, Taft PJ, Gansemer ND, Zabner J. HSP90 inhibitor geldanamycin reverts IL-13- and IL-17-induced airway goblet cell metaplasia. J Clin Invest. 2019 Feb 1;129(2):744-758. doi: 10.1172/JCI123524. Epub 2019 Jan 14. PMID: 30640172; PMCID: PMC6355221.
2. Choi YJ, Kim NH, Lim MS, Lee HJ, Kim SS, Chun W. Geldanamycin attenuates 3-nitropropionic acid-induced apoptosis and JNK activation through the expression of HSP 70 in striatal cells. Int J Mol Med. 2014 Jul;34(1):24-34. doi: 10.3892/ijmm.2014.1747. Epub 2014 Apr 22. PMID: 24756698; PMCID: PMC4072345.

In vivo study

1. Wang C, Liu P, Luo J, Ding H, Gao Y, Sun L, Luo F, Liu X, He H. Geldanamycin Reduces Acute Respiratory Distress Syndrome and Promotes the Survival of Mice Infected with the Highly Virulent H5N1 Influenza Virus. Front Cell Infect Microbiol. 2017 Jun 15;7:267. doi: 10.3389/fcimb.2017.00267. PMID: 28664154; PMCID: PMC5471324.

2. Li YH, Lu QN, Wang HQ, Tao PZ, Jiang JD. Geldanamycin, a ligand of heat shock protein 90, inhibits herpes simplex virus type 2 replication both in vitro and in vivo. J Antibiot (Tokyo). 2012 Oct;65(10):509-12. doi: 10.1038/ja.2012.67. Epub 2012 Aug 22. PMID: 22909975; PMCID: PMC7094714.

7. Bioactivity

Biological target:

Geldanamycin is a Hsp90 inhibitor with antimicrobial activity against many Gram-positive and some Gram-negative bacteria as well as has anti-influenza virus H5N1 activities.

In vitro activity

To examine the effect of GA (Geldanamycin), an HSP 90 inhibitor, in the expression of HSPs, the expression levels of HSP 70 and HSP 90 were examined. GA resulted in the increased expression of HSP 70 (Fig. 1A). However, the expression level of HSP 90 was not significantly changed with GA, which inhibits the function of HSP 90 by binding to the ADP/ATP-binding pocket of the protein. In order to examine the effect of GA on the viability of 3NP-stimulated striatal cells, the cells were treated with 3NP in the absence or presence of GA. Significant striatal cell death was observed with 3NP treatment in MTT and LDH assays (Fig. 2A and B). However, GA significantly attenuated 3NP-induced striatal cell death. In addition, the number of positive cells of 7-AAD and FITC, which indicate dead cells, was significantly reduced with GA in the FACS analysis (Fig. 2Ca and b). In addition, GA significantly reduced the number of 3NP-induced apoptotic nuclei (Fig. 3B). To investigate the effects of GA in 3NP-induced ROS production, the intracellular ROS generation was measured in the absence or presence of GA in 3NP-challenged striatal cells. Treatment of 3NP resulted in the production of a considerable amount of the intracellular ROS in striatal cells. GA significantly attenuated 3NP-induced ROS production, albeit not completely (Fig. 4). Fig. 4A shows a representative confocal image of intracellular level of ROS and Fig. 4B shows quantitative analysis of ROS production. The result demonstrates that GA protects cells by inhibiting the production of ROS in 3NP-challenged striatal cells. GA may be a valuable therapeutic agent to increase the intracellular level of HSP 70, which plays a beneficial role in the pathogenesis of HD (Huntington's disease).

Int J Mol Med. 2014 Jul; 34(1): 24–34. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4072345/

In vivo activity

The in vivo anti-HSV-2 activity of GA was evaluated in the mouse HSV-2 vagina model. In mouse HSV-2 vaginal model, symptoms of illness that were observed in mice after vaginal HSV-2 infection include: puff fur, arched backs, feeble gait, hind limb paralysis, wet fur that was stained by feces in the anus vaginal region, swollen red vulva, hair loss and skin lesions in the anus vaginal region and on the hind limbs, and death. Administration of GA suspension to vagina after HSV-2 infection (1.43, 2.86 and 5.72 mg kg−1, t.i.d. for 7 days) protected the infected mice from death, and increased the average survival days in a dose-dependent manner. The differences were statistically significant when compared with untreated infected controls (Table 2). As shown in Figure 2, GA also significantly reduced the shedding of HSV-2 from mice vagina. Samples of vaginal secretions from all mice in each group were collected individually at 96 h post infection. HSV-2 titers were determined by a cytopathic effect assay. GA 5.72, 2.86 and 1.43 mg kg−1 treatment reduced HSV-2 shedding by 794, 126 and 126 times, as compared with the infected control group, respectively. In summary, GA efficiently inhibits HSV-2 replication in vivo and shows therapeutic effects better than that of ACV.

Reference: J Antibiot (Tokyo). 2012; 65(10): 509–512. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7094714/

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.