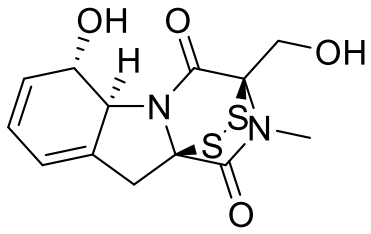
Product data sheet

MedKoo Cat#: 540178 Name: Gliotoxin CAS: 67-99-2 Chemical Formula: $C_{13}H_{14}N_2O_4S_2$ Exact Mass: 326.0395 Molecular Weight: 326.385	
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:
Gliotoxin is a toxin found in Aspergillus. It induces apoptosis in cervical cancer cells and chondrosarcoma cells, suppresses the adaptive immune response in leukocytes, and inhibits the proteasome in Plasmodium falciparum.

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	5.0	15.32
DMSO	5.0	15.32
DMSO:PBS (pH 7.2) (1:5)	0.5	1.53

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.06 mL	15.32 mL	30.64 mL
5 mM	0.61 mL	3.06 mL	6.13 mL
10 mM	0.31 mL	1.53 mL	3.06 mL
50 mM	0.06 mL	0.31 mL	0.61 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. Stoszko M, Al-Hatmi AMS, Skriba A, Roling M, Ne E, Crespo R, Mueller YM, Najafzadeh MJ, Kang J, Ptackova R, LeMasters E, Biswas P, Bertoldi A, Kan TW, de Crignis E, Sulc M, Lebbink JHG, Rokx C, Verbon A, van Ijcken W, Katsikis PD, Palstra RJ, Havlicek V, de Hoog S, Mahmoudi T. Gliotoxin, identified from a screen of fungal metabolites, disrupts 7SK snRNP, releases P-TEFb, and reverses HIV-1 latency. Sci Adv. 2020 Aug 12;6(33):eaba6617. doi: 10.1126/sciadv.aba6617. PMID: 32851167; PMCID: PMC7423394.
2. Hubmann R, Schnabl S, Araghi M, Schmidl C, Rendeiro AF, Hilgarth M, Demirtas D, Ali F, Staber PB, Valent P, Zielinski C, Jäger U, Shehata M. Targeting Nuclear NOTCH2 by Gliotoxin Recovers a Tumor-Suppressor NOTCH3 Activity in CLL. Cells. 2020 Jun 18;9(6):1484. doi: 10.3390/cells9061484. PMID: 32570839; PMCID: PMC7348714.

In vivo study

1. Fraga-Silva TFC, Mimura LAN, Leite LCT, Borim PA, Ishikawa LLW, Venturini J, Arruda MSP, Sartori A. Gliotoxin Aggravates Experimental Autoimmune Encephalomyelitis by Triggering Neuroinflammation. Toxins (Basel). 2019 Jul 26;11(8):443. doi: 10.3390/toxins11080443. PMID: 31357414; PMCID: PMC6722733.

2. Hubmann R, Sieghart W, Schnabl S, Araghi M, Hilgarth M, Reiter M, Demirtas D, Valent P, Zielinski C, Jäger U, Shehata M. Gliotoxin Targets Nuclear NOTCH2 in Human Solid Tumor Derived Cell Lines In Vitro and Inhibits Melanoma Growth in Xenograft Mouse Model. Front Pharmacol. 2017 Jul 7;8:319. doi: 10.3389/fphar.2017.00319. PMID: 28736522; PMCID: PMC5500618.

7. Bioactivity

Biological target:

Gliotoxin inhibits inducible NF-κB activity by preventing IκB degradation, which consequently induces host-cell apoptosis.

In vitro activity

Consistent with the literature, treatment with higher concentrations of GTX (gliotoxin) at 100 nM and 1 μM caused apoptosis and death of primary $CD4^+$ and $CD8^+$ T cells as well as B cells, natural killer (NK) cells, and monocytes, as shown by annexin V staining followed by flow cytometry (Figs. 2, D and E, and 3C and figs. S3B and S4, A to C).

Reference: Sci Adv. 2020 Aug 12;6(33):eaba6617. https://pubmed.ncbi.nlm.nih.gov/32851167/

In vivo activity

The effect of GTX (gliotoxin) in the CNS was evaluated in lumbar spinal cord samples, seven days after its third dose, in both normal and EAE mice. No inflammation or demyelination was observed in normal mice, as illustrated in Figure 3(A1,B1). However, GTX caused inflammation (Figure 3(A2)) and demyelination (Figure 3(B2)) in this group. As expected, a clear process of inflammation (Figure 3(A3)) and demyelination (Figure 3(B3)) was present in the EAE mice. GTX inoculation in EAE mice resulted in a much more pronounced cell infiltration in the meningeal compartment and cortex (Figure 3(A4)), and demyelination (Figure 3(B4)).

Reference: Toxins (Basel). 2019 Jul 26;11(8):443. https://pubmed.ncbi.nlm.nih.gov/31357414/