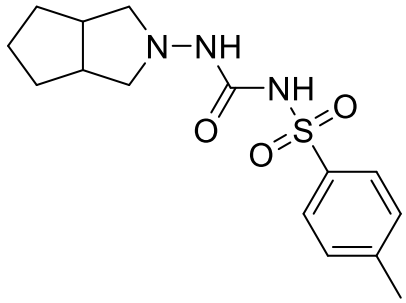
Product data sheet

MedKoo Cat#: 317969 Name: Gliclazide CAS: 21187-98-4 Chemical Formula: $C_{15}H_{21}N_3O_3S$ Exact Mass: 323.13036 Molecular Weight: 323.411	
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:

Gliclazide is an oral anti-hyperglycemic agent used for the treatment of non-insulin-dependent diabetes mellitus. It belongs to the sulfonylurea class of insulin secretagogues, which act by stimulating β cells of the pancreas to release insulin. Sulfonylureas increase both basal insulin secretion and meal-stimulated insulin release. Medications in this class differ in their dose, rate of absorption, duration of action, route of elimination and binding site on their target pancreatic β cell receptor. Sulfonylureas also increase peripheral glucose utilization, decrease hepatic gluconeogenesis and may increase the number and sensitivity of insulin receptors. Sulfonylureas are associated with weight gain. Due to their mechanism of action, sulfonylureas may cause hypoglycemia and require consistent food intake to decrease this risk. Gliclazide has been shown to decrease fasting plasma glucose, postprandial blood glucose and glycosolated hemoglobin (HbA1c) levels.

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	20.0	61.84
DMSO	61.67	190.68
DMSO:PBS (pH 7.2) (1:3)	0.25	0.77

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.09 mL	15.46 mL	30.92 mL
5 mM	0.62 mL	3.09 mL	6.18 mL
10 mM	0.31 mL	1.55 mL	3.09 mL
50 mM	0.06 mL	0.31 mL	0.62 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. Jahan H, Choudhary MI. Gliclazide alters macrophages polarization state in diabetic atherosclerosis in vitro via blocking AGE-RAGE/TLR4-reactive oxygen species-activated NF-kβ nexus. Eur J Pharmacol. 2021 Mar 5;894:173874. doi: 10.1016/j.ejphar.2021.173874. Epub 2021 Jan 15. PMID: 33460615.
2. Yang PY, Li PC, Feng B. Protective effects of gliclazide on high glucose and AGEs-induced damage of glomerular mesangial cells and renal tubular epithelial cells via inhibiting RAGE-p22phox-NF-kB pathway. Eur Rev Med Pharmacol Sci. 2019 Oct;23(20):9099-9107. doi: 10.26355/eurrev_201910_19313. PMID: 31696501.

In vivo study

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1. Talebpour Amiri F, Arzani S, Farzipour S, Hosseinimehr SJ. Radioprotective effects of gliclazide against irradiation-induced cardiotoxicity and lung injury through inhibiting oxidative stress. Med Oncol. 2022 Sep 7;39(12):199. doi: 10.1007/s12032-022-01803-y. PMID: 36071308.
2. Taghizadeh F, Hosseinimehr SJ, Zargari M, Karimpour Malekshah A, Talebpour Amiri FB. Gliclazide attenuates cisplatin-induced nephrotoxicity through inhibiting NF-κB and caspase-3 activity. IUBMB Life. 2020 Sep;72(9):2024-2033. doi: 10.1002/iub.2342. Epub 2020 Jul 20. PMID: 32687680.

7. Bioactivity

Biological target:

Gliclazide (S1702) is a whole-cell beta-cell ATP-sensitive potassium currents blocker with an IC_{50} of 184 nM.

In vitro activity

Similarly, this study found that Glz (gliclazide) at 100 μM exhibited the strongest inhibitory effect, an approximately 2-fold decrease in AGEs-induced RAGE expression, while 0.7-fold stronger effect than PDTC (Fig. 7C). These results suggest that Glz suppresses the macrophages inflammatory state apparently through inhibiting the RAGE/NF-kβ/i-NOS nexus.

Reference: Eur J Pharmacol. 2021 Mar 5;894:173874. https://pubmed.ncbi.nlm.nih.gov/33460615/

In vivo activity

The findings revealed that IR induces atypical features in heart and lung histostructure, and oxidative stress (an increase of MDA, PC levels, and decrease of GSH content) in these tissues. GLZ (gliclazide) administration preserved heart and lung damages and improves oxidative stress markers in mice.

Reference: Med Oncol. 2022 Sep 7;39(12):199. https://pubmed.ncbi.nlm.nih.gov/36071308/

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.