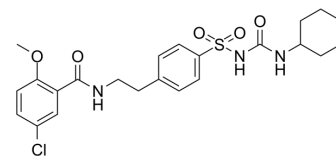


## Glibenclamide

<b>Cat. No.:</b>	HY-15206		
<b>CAS No.:</b>	10238-21-8		
<b>Molecular Formula:</b>	C <sub>23</sub> H <sub>28</sub> ClN <sub>3</sub> O <sub>5</sub> S		
<b>Molecular Weight:</b>	494		
<b>Target:</b>	Potassium Channel; Mitochondrial Metabolism; Autophagy; CFTR; P-glycoprotein		
<b>Pathway:</b>	Membrane Transporter/Ion Channel; Metabolic Enzyme/Protease; Autophagy		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	6 months
		-20°C	1 month



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : 250 mg/mL (506.07 mM; Need ultrasonic)  
 H<sub>2</sub>O : 0.1 mg/mL (0.20 mM; Need ultrasonic and warming)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	2.0243 mL	10.1215 mL	20.2429 mL
	5 mM	0.4049 mL	2.0243 mL	4.0486 mL
	10 mM	0.2024 mL	1.0121 mL	2.0243 mL

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
 Solubility: ≥ 2.08 mg/mL (4.21 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.08 mg/mL (4.21 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Glibenclamide (Glyburide) is an orally active ATP-sensitive K<sup>+</sup> channel (K<sub>ATP</sub>) inhibitor and can be used for the research of diabetes and obesity<sup>[1]</sup>. Glibenclamide inhibits P-glycoprotein. Glibenclamide directly binds and blocks the SUR1 subunits of K<sub>ATP</sub> and inhibits the cystic fibrosis transmembrane conductance regulator protein (CFTR)<sup>[3]</sup>. Glibenclamide interferes with mitochondrial bioenergetics by inducing changes on membrane ion permeability<sup>[4]</sup>. Glibenclamide can induce autophagy<sup>[5]</sup>.

#### IC<sub>50</sub> & Target

K<sub>ATP</sub><sup>[1]</sup>

#### In Vitro

Glibenclamide (Brown adipocytes; 10 μM; 1 day) has no effect on adipocyte differentiation. Glibenclamide (Ucp1-2A-GFP

brown adipocyte) significantly increases UCP1 expression. Glibenclamide directly binds and blocks the SUR1 subunits of ATP-dependent potassium channels ( $K_{ATP}$ ) and consequently increases insulin secretion from the pancreatic  $\beta$  cells<sup>[2]</sup>. Glibenclamide interferes with mitochondrial bioenergy by permeating mitochondrial intima with  $Cl^-$  and promoting mitochondrial net  $Cl^-/K^+$  cotransport<sup>[4]</sup>. Glibenclamide induced autophagy inhibits its insulin secretion-improving function in  $\beta$  cells<sup>[5]</sup>.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### In Vivo

Glibenclamide (2 mg/kg; p.o.) increases of insulin release and rapid drop of blood glucose level<sup>[2]</sup>.  
Glibenclamide (50  $\mu$ g/kg; p.o.) does not cause significant change, such as body weight or body composition<sup>[2]</sup>.  
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Mice <sup>[2]</sup>
Dosage:	2 mg/kg
Administration:	P.o.
Result:	Increased of insulin release and rapid drop of blood glucose level.

## CUSTOMER VALIDATION

- Br J Pharmacol. 2020 May;177(10):2286-2302.
- BMC Biol. 2021 Mar 3;19(1):40.
- Pharmacol Res. 2020 Mar;153:104679.
- Front Cell Dev Biol. 2020 May 12;8:269.
- Front Pharmacol. 26 April 2021.

See more customer validations on [www.MedChemExpress.com](http://www.MedChemExpress.com)

## REFERENCES

- [1]. Fernandes MA, et al. Glibenclamide interferes with mitochondrial bioenergetics by inducing changes on membrane ion permeability. J Biochem Mol Toxicol. 2004;18(3):162-169.
- [2]. Heo R, et al. The anti-diabetic drug trelagliptin induces vasodilation via activation of Kv channels and SERCA pumps. Life Sci. 2021;283:119868.
- [3]. Qiu Y, et al. Glyburide Regulates UCP1 Expression in Adipocytes Independent of KATP Channel Blockade. iScience. 2020;23(9):101446.
- [4]. Golstein PE, et al. P-glycoprotein inhibition by glibenclamide and related compounds. Pflugers Arch. 1999;437(5):652-660.
- [5]. Zhou J, et al. Glibenclamide-Induced Autophagy Inhibits Its Insulin Secretion-Improving Function in  $\beta$  Cells. Int J Endocrinol. 2019;2019:1265175.

**Caution: Product has not been fully validated for medical applications. For research use only.**

#### India Contact:

Life Technologies (India) Pvt. Ltd.

306, Aggarwal City Mall, Opposite M2K Pitampura, Delhi – 110034 (INDIA). Ph: +91-11-42208000, 42208111, 42208222, Mobile: +91-9810521400, Fax: +91-11-42208444

Email: [customerservice@lifetechindia.com](mailto:customerservice@lifetechindia.com) Website: [www.lifetechindia.com](http://www.lifetechindia.com)