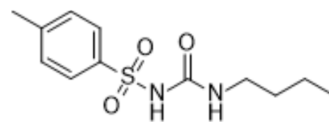


## Tolbutamide

<b>Cat. No.:</b>	HY-B0401		
<b>CAS No.:</b>	64-77-7		
<b>Molecular Formula:</b>	C <sub>12</sub> H <sub>18</sub> N <sub>2</sub> O <sub>3</sub> S		
<b>Molecular Weight:</b>	270.35		
<b>Target:</b>	Na <sup>+</sup> /K <sup>+</sup> ATPase		
<b>Pathway:</b>	Membrane Transporter/Ion Channel		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 34 mg/mL (125.76 mM)  
 \* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	3.6989 mL	18.4945 mL	36.9891 mL
	5 mM	0.7398 mL	3.6989 mL	7.3978 mL
	10 mM	0.3699 mL	1.8495 mL	3.6989 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 (7.69 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
 Solubility: ≥ 2.08 mg/mL (7.69 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
 Solubility: ≥ 2.08 mg/mL (7.69 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

Tolbutamide is an orally active K<sub>ATP</sub> inhibitor. Tolbutamide inhibits cell proliferation, stimulates exocytosis of glucagon and reduces fetal lethality of mice. Tolbutamide can be used in the research of diabetes<sup>[1][2][3][4]</sup>.

#### In Vitro

Tolbutamide (400 μM, 24h) with dbcAMP reduces glioma cell proliferation by increasing connexin43 (Cx43)<sup>[1]</sup>. Tolbutamide (0.1 μM, 1 min) stimulates exocytosis by activation of a mitochondrial-like K<sub>ATP</sub> channel in rat A-cells<sup>[2]</sup>. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

	Western Blot Analysis <sup>[1]</sup>	
	Cell Line:	Glioma cell
	Concentration:	400 µM
	Incubation Time:	24h
	Result:	Increasing the level of Cx43.
<b>In Vivo</b>	<p>Tolbutamide (125 mg/kg, Supplemented in daily diet for 27 weeks) reduces the incidence of diabetes mellitus in the non-obese-diabetic mouse<sup>[3]</sup>.</p> <p>Tolbutamide (100-400 mg/kg, Intraperitoneal injection, 400 mg/kg on day 13; 100 mg/kg on day 10-13; combined treatment: 100 mg/kg on day 10-12 and 400 mg/kg on day 13) reduces fetal lethality in pregnant mice<sup>[4]</sup>.</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>	
	Animal Model:	Non-obese-diabetic mouse <sup>[3]</sup>
	Dosage:	125 mg/kg
	Administration:	Supplemented in daily diet for 27 weeks
	Result:	Showed 10 of 23 animals developed diabetes compared with 18 of 24 in the control groups.
	Animal Model:	Pregnant mice <sup>[4]</sup>
	Dosage:	100 mg/kg, 400 mg/kg
	Administration:	Intraperitoneal injection (i.p.)
	Result:	Showed a significant reduction (50 %) in the frequency of living fetuses for the group of 400 mg/kg on day 13. Had significantly fewer petechiae and more late resorptions for the group of 400 mg/kg on day 13.

## CUSTOMER VALIDATION

- Cancer Cell Int. 2023 Jan 31;23(1):14.
- AAPS J. 2021 Jun 28;23(4):91.

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## REFERENCES

[1]. Sánchez-Alvarez R, et al. Tolbutamide reduces glioma cell proliferation by increasing connexin43, which promotes the up-regulation of p21 and p27 and subsequent changes in retinoblastoma phosphorylation [J]. *Glia*, 2006, 54(2): 125-134.

[2]. Hoey M, et al. Tolbutamide stimulates exocytosis of glucagon by inhibition of a mitochondrial-like ATP-sensitive K<sup>+</sup> (KATP) conductance in rat pancreatic A-cells [J]. *The Journal of Physiology*, 2000, 527(1): 109-120.

[3]. Williams A J K, et al. Tolbutamide reduces the incidence of diabetes mellitus, but not insulinitis, in the non-obese-diabetic mouse [J]. *Diabetologia*, 1993, 36: 487-492.

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

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