产品名称：氯甲苯噻嗪
产品别名：Diazoxide；二氮嗪；Sch-6783; SRG-95213

生物活性：

Description	Diazoxide (Sch-6783) is an ATP-sensitive potassium channel activator, can be used to treat hyperinsulinism.
In Vitro	Diazoxide (Sch-6783) has a number of physiological effects, including lowering the blood pressure and rectifying hypoglycemia. Diazoxide has powerful protective properties against cardiac ischemia[1]. Diazoxide (Sch-6783) could protect NSC-34 neurons against the main sources of neurodegenerative damage. Diazoxide increases Nrf2 nuclear translocation in NSC-34 motoneurons and prevents endogenous oxidative damage[2].
In Vivo	Diazoxide (Sch-6783) attenuates postresuscitation brain injury, protects mitochondrial function, inhibits brain cell apoptosis, and activates the PKC pathway by opening mitoKATP channels[3]. Treatment with Diazoxide (Sch-6783) in wild-type mice decreases intraocular pressure (IOP) by 21.5±3.2% with an absolute IOP reduction of 3.9 ± 0.6 mm Hg[4].
Solvent&Solubility	***In Vitro:*** **DMSO : ≥ 35 mg/mL (151.73 mM)** **H_2O : < 0.1 mg/mL** (insoluble) * "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	4.3352 mL	21.6760 mL	43.3520 mL
5 mM	0.8670 mL	4.3352 mL	8.6704 mL
10 mM	0.4335 mL	2.1676 mL	4.3352 mL

*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液；一旦配成溶液，请分装保存，避免反复冻融造成的产品失效。

储备液的保存方式和期限：-80°C, 6 months; -20°C, 1 month。-80°C 储存时，请在 6 个月内使用，-20°C 储存时，请在 1 个月内使用。

In Vivo:

请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 **In Vitro** 方式配制澄清的储备液，再依次添加助溶剂：

——为保证实验结果的可靠性，澄清的储备液可以根据储存条件，适当保存；体内实验的工作液，建议您现用现配，当天使用； 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比；如在配制过程中出现沉淀、析出现象，可以通过加热和/或超声的方式助溶

1.请依序添加每种溶剂： 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline

Solubility: ≥ 2.67 mg/mL (11.57 mM); Clear solution

此方案可获得 ≥ 2.67 mg/mL (11.57 mM，饱和度未知) 的澄清溶液。

以 1 mL 工作液为例，取 100 μL 26.7 mg/mL 的澄清 DMSO 储备液加到 400 μL PEG300 中，混合均匀；向上述体系中加入 50 μL Tween-80，混合均匀；然后继续加入 450 μL 生理盐水定容至 1 mL。

2.请依序添加每种溶剂： 10% DMSO →90% corn oil

Solubility: ≥ 2.67 mg/mL (11.57 mM); Clear solution

此方案可获得 ≥ 2.67 mg/mL (11.57 mM，饱和度未知) 的澄清溶液，此方案不适用于实验周期在半个月以上的实验。

	以 1 mL 工作液为例，取 100 μL 26.7 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中，混合均匀。
References	[1]. Coetzee WA, et al. Multiplicity of effectors of the cardioprotective agent, diazoxide. Pharmacol Ther. 2013 Nov;140(2):167-75. [2]. Virgili N, et al. K(ATP) channel opener diazoxide prevents neurodegeneration: a new mechanism of action viaantioxidative pathway activation. PLoS One. 2013 Sep 11;8(9):e75189. [3]. Wu H, et al. Diazoxide Attenuates Postresuscitation Brain Injury in a Rat Model of Asphyxial Cardiac Arrest by Opening Mitochondrial ATP-Sensitive Potassium Channels. Biomed Res Int. 2016;2016:1253842. [4]. Chowdhury UR, et al. ATP-sensitive potassium (K(ATP)) channel openers diazoxide and nicorandil lower intraocular pressure in vivo. Invest Ophthalmol Vis Sci. 2013 Jul 22;54(7):4892-9.

实验参考：

Cell Assay	Diazoxide is dissolved in DMSO to prepare 50 mM stock solution. NSC-34 cells are allowed to differentiate for 8 weeks under reduced serum conditions and then seeded in 24-well plates. Glutamate is dissolved in culture medium and added to cultures at concentration of 10 μM for 24 h. Cell treatment with 100 μM diazoxide starts 2 h before glutamate exposure. Cell viability is measured by the MTT assay[2].
Animal Administration	Rats: Adult male Sprague-Dawley rats with induced cerebral ischemia (n=10 per group) receive an intraperitoneal injection of 0.1% DMSO (1 mL; vehicle group), diazoxide (10 mg/kg; DZ group), or diazoxide (10 mg/kg) plus 5-hydroxydecanoate (5 mg/kg; DZ + 5-HD group) 30 min after CPR. The control group (sham group, n=5) undergoes sham operation, without cardiac arrest. Mitochondrial respiratory control rate (RCR) is determined. Brain cell apoptosis is assessed using TUNEL staining. Expression of Bcl-2, Bax, and protein kinase C epsilon (PKCε) in the cerebral cortex is determined by Western blotting and immunohistochemistry[3]. Mouse: Diazoxide is prepared by diluting a 100 mM stock solution in 10% polyethoxylated castor oil in PBS. In C57BL/6 wild-type and Kir6.2($^{-/-}$) mice, a 5 μL drop of 5 mM diazoxide is topically administered to one eye of each mouse while the fellow control eye received vehicle (DMSO and 10% polyethoxylated castor oil in the same proportion as the treated eye). IOP is measured daily at 1 hour, 4 hours, and 23 hours following treatment. Treatment with diazoxide and vehicle is continued daily for 14 consecutive days[4].
References	[1]. Coetzee WA, et al. Multiplicity of effectors of the cardioprotective agent, diazoxide. Pharmacol Ther. 2013 Nov;140(2):167-75. [2]. Virgili N, et al. K(ATP) channel opener diazoxide prevents neurodegeneration: a new mechanism of action viaantioxidative pathway activation. PLoS One. 2013 Sep 11;8(9):e75189. [3]. Wu H, et al. Diazoxide Attenuates Postresuscitation Brain Injury in a Rat Model of Asphyxial Cardiac Arrest by Opening Mitochondrial ATP-Sensitive Potassium Channels. Biomed Res Int. 2016;2016:1253842. [4]. Chowdhury UR, et al. ATP-sensitive potassium (K(ATP)) channel openers diazoxide and nicorandil lower intraocular pressure in vivo. Invest Ophthalmol Vis Sci. 2013 Jul 22;54(7):4892-9.