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产品名称: 乙琥胺
产品别名: **Ethosuximide**

生物活性:				
Description	Ethosuximide, a widely prescribed anti-epileptic drug, improves the phenotypes of multiple neurodegenerative disease models and blocks the low voltage activated T-type calcium channel.			
IC ₅₀ & Target	calcium channel[1]			
In Vitro	<p>The efficacy of Ethosuximide in generalized absence epilepsy is thought to be due to blockade of the low voltage activated T-type calcium channel. There is no reduction in total Tau levels in Ethosuximide treated Tau transgenic worms as compare to vehicle controls. The rescuing effect of Ethosuximide is therefore not due to transgene suppression or reduced expression of toxic mutant Tau protein. Quantification of the amount of soluble and insoluble (RIPA-extractable) Tau relative to total Tau levels reveals a significant reduction in aberrantly-folded, insoluble Tau and a corresponding increase in soluble Tau in Ethosuximide-treated compare with untreated worms[1]. Concentrations of 2 μM or more of Ethosuximide not only are found to be less effective than 1 μM concentration of Ethosuximide, but also induce cell toxicity. GABA staining immunofluorescence images show that after treatment with Ethosuximide, GABA positive neuron increases by 3 and 6.5 fold for concentrations of 0.1 and 1 μM, respectively. BrdU staining shows nuclei proliferation after 2 to 3 days of Ethosuximide exposure. The mean of nuclei is 15.98\pm0.41 for the low concentration of Ethosuximide while it is 25.27\pm0.48 for the high concentration after BrdU staining. This number is 11.05\pm0.2 for lithium chloride[2].</p>			
Solvent&Solubility	<p>In Vitro: DMSO : \geq 125 mg/mL (885.46 mM) * "\geq" means soluble, but saturation unknown.</p>			
		Solvent Mass Concentration	1 mg	5 mg
	Preparing	1 mM	7.0837 mL	35.4183 mL
	Stock Solutions	5 mM	1.4167 mL	7.0837 mL
		10 mM	0.7084 mL	3.5418 mL
	<p>*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。</p> <p>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。</p> <p>In Vivo:</p> <p>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:</p> <p>——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</p> <p>1.请依序添加每种溶剂: 10% DMSO\rightarrow40% PEG300 \rightarrow5% Tween-80 \rightarrow 45% saline</p> <p>Solubility: \geq 2.08 mg/mL (14.73 mM); Clear solution</p> <p>此方案可获得 \geq 2.08 mg/mL (14.73 mM, 饱和度未知) 的澄清溶液。</p>			



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	<p>以 1 mL 工作液为例, 取 100 μL 20.8 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</p> <p>2. 请依序添加每种溶剂: 10% DMSO \rightarrow 90% (20% SBE-β-CD in saline)</p> <p>Solubility: \geq 2.08 mg/mL (14.73 mM); Clear solution</p> <p>此方案可获得 \geq 2.08 mg/mL (14.73 mM, 饱和度未知) 的澄清溶液。</p> <p>以 1 mL 工作液为例, 取 100 μL 20.8 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水溶液中, 混合均匀。</p> <p>3. 请依序添加每种溶剂: 10% DMSO \rightarrow 90% corn oil</p> <p>Solubility: \geq 2.08 mg/mL (14.73 mM); Clear solution</p> <p>此方案可获得 \geq 2.08 mg/mL (14.73 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。</p> <p>以 1 mL 工作液为例, 取 100 μL 20.8 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中, 混合均匀。</p>
References	<p>[1]. Chen X, et al. Ethosuximide ameliorates neurodegenerative disease phenotypes by modulating DAF-16/FOXO target gene expression. Mol Neurodegener. 2015 Sep 29;10:51.</p> <p>[2]. Sondossi K, et al. Analysis of the antiepileptic, ethosuximide impacts on neurogenesis of rat forebrain stem cells. Fundam Clin Pharmacol. 2014 Oct;28(5):512-8.</p>
实验参考:	
Cell Assay	<p>Neuronal stem cells from the forebrain Cortex of a 3-day-old rat are used in this study. The cells are differentiated by withdrawal of basic fibroblastic growth factor (bFGF) and exposed to Ethosuximide at two concentrations of 0.1 μM and 1 μM. Before drug treatment, the cells are rinsed once with PBS, and the medium is replaced with fresh, bFGF-free DMEM/F12 medium containing different concentration of Ethosuximide. Medium exchange is done every day for 6 days with medium containing Ethosuximide. Then, cells are fixed for immunocytochemistry[2].</p>
Kinase Assay	<p>Vehicle- and Ethosuximide-treated Tau V337M worms are lysed and separated into soluble and insoluble fractions. Fractions are separated by SDS-PAGE and western blotted using anti-human Tau T46 and anti-actin antibodies. The abundance of Tau protein in each fraction is quantified by densitometry and normalized against beta-actin. Total Tau levels in lysates are expressed as the percentage of actin-normalized Tau relative to vehicle control lysates; Tau levels in sequentially extracted fractions are expressed as the percentage of actin-normalized Tau relative to the sum of both fractions (soluble+RIPA) combined[1].</p>
References	<p>[1]. Chen X, et al. Ethosuximide ameliorates neurodegenerative disease phenotypes by modulating DAF-16/FOXO target gene expression. Mol Neurodegener. 2015 Sep 29;10:51.</p> <p>[2]. Sondossi K, et al. Analysis of the antiepileptic, ethosuximide impacts on neurogenesis of rat forebrain stem cells. Fundam Clin Pharmacol. 2014 Oct;28(5):512-8.</p>