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产品名称: TTK21
CAS 号: 709676-56-2
产品货号: S89110

生物活性:

Description	TTK21 是组蛋白乙酰转移酶 CBP/p300 的激活剂。当与葡萄糖基碳纳米球 (CSP) 结合时, TTK21 可通过血脑屏障, 无毒性, 并可到达大脑的不同部位。TTK21 对大脑神经发生和长期记忆功能具有有益意义。CSP-TTK21 可以修复 A β 受损的长期电位 (LTP), 可能增强促进突触健康和认知功能的基因的转录。CSP-TTK21 口服有效, 并且可改善脊柱损伤大鼠模型的运动功能、组蛋白乙酰化动态。								
IC50 & Target[1]	CBP/p300								
In Vitro	TTK21 (50-275 μ M) 能够浓度依赖性地激活 CBP 和 p300 乙酰转移酶, 提高组蛋白的乙酰化水平。有效地激活了 CBP/p300 的活性, 并且增加了组蛋白 H3 和 H4 的乙酰化。100 μ M TTK21 显著促进了 p300 的自乙酰化[1]。 TTK21 (50-275 μ M; 6-24 h) 在 HeLa 细胞中, 本身不能有效穿透细胞膜进入细胞。但当与碳纳米球 CSP 结合后, 能够进入 SH-SY5Y 神经细胞并显著提高组蛋白 H3 的乙酰化水平, 表明 CSP-TTK21 复合物具有穿透细胞膜的能力[1]。 CSP-TTK21 (0.36 μg/mL; 1 h) 恢复了由 Aβ (1-42) 多聚体引起的蛋白质合成依赖的 long-term potentiation (LTP) 损伤[2]。 RT-PCR[2] <table><tr><td>Cell Line:</td><td>Rat hippocampal CA1 area slices</td></tr><tr><td>Concentration:</td><td>CSP-TTK21 0.36 μg/ml</td></tr><tr><td>Incubation Time:</td><td>1 h</td></tr><tr><td>Result:</td><td>CSP-TTK21 upregulated certain genes whose expression was decreased under Aβ(1-42) treatment, such as genes involved in the Wnt signaling pathway. CSP-TTK21 also potentially downregulated genes associated with inflammation, helping to reduce the neuroinflammatory response caused by Aβ(1-42).</td></tr></table>	Cell Line:	Rat hippocampal CA1 area slices	Concentration:	CSP-TTK21 0.36 μ g/ml	Incubation Time:	1 h	Result:	CSP-TTK21 upregulated certain genes whose expression was decreased under A β (1-42) treatment, such as genes involved in the Wnt signaling pathway. CSP-TTK21 also potentially downregulated genes associated with inflammation, helping to reduce the neuroinflammatory response caused by A β (1-42).
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In Vivo	CSP-TTK21 ((TTK21 conjugated to carbon nanosphere, CSP-TTK21) 20 mg/kg; i.p.单剂量) 有可能增强神经发生和大脑功能[1]。 CSP-TTK21 (20 mg/kg; p.o; 单剂量) 的长期增效与腹腔注射相当, 表明野生型老鼠的记忆有效增强[3]。 CSP-TTK21 (10 mg/kg; p.o; 每周一次) 在脊髓损伤的老鼠中促进脊髓损伤后的运动恢复, 和促进脊髓损伤后前额叶皮层和小脑的再生相关基因的表达[3]。 <table><tr><td>Animal Model:</td><td>B57BL/6J male [1]</td></tr><tr><td>Dosage:</td><td>CSP-TTK21; 20 mg/kg; single dose</td></tr><tr><td>Administration:</td><td>i.p.</td></tr><tr><td>Result:</td><td>Increased histone acetylation significantly in the hippocampus and frontal cortex. CSP-TTK21 crossed the blood-brain barrier and was primarily detected in the brain, liver, and spleen. It promoted differentiation of newly generated neurons in the dentate gyrus.</td></tr></table>	Animal Model:	B57BL/6J male [1]	Dosage:	CSP-TTK21; 20 mg/kg; single dose	Administration:	i.p.	Result:	Increased histone acetylation significantly in the hippocampus and frontal cortex. CSP-TTK21 crossed the blood-brain barrier and was primarily detected in the brain, liver, and spleen. It promoted differentiation of newly generated neurons in the dentate gyrus.
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		Mice with CSP-TTK21 displayed a persistent memory of the platform location in a Morris water maze task for a longer period compared to controls, demonstrating enhanced long-term memory.			
	Animal Model:	Wild-type mice [3]			
	Dosage:	CSP-TTK21; 20 mg/kg; single dose			
	Administration:	p.o.			
	Result:	The administered compound crossed the blood-brain barrier, induced histone acetylation specifically H4K12ac and H3K14ac marks in the hippocampus, and did not alter basal synaptic transmission. It was found to enhance long-term potentiation comparably to intraperitoneal injection, suggesting effective memory enhancement through oral delivery.			
	Animal Model:	rats with spinal cord injury[3]			
	Dosage:	CSP-TTK21; 10 mg/kg; weekly			
	Administration:	p.o.			
	Result:	Rats with CSP-TTK21 showed significant improvement in locomotion and rearing activity compared to controls. Histone acetylation was notably increased in the spinal cord, suggesting enhanced gene expression linked to regeneration and functional recovery. Enhanced histone acetylation levels (H4K12ac, H3K27ac, H3K9ac) were observed in the prefrontal cortex and cerebellum of rats with CSP-TTK21, indicating active epigenetic modifications that support neuronal regeneration and functional recovery.			
	Solvent&Solubility	细胞实验:			
DMSO 中的溶解度 : 100 mg/mL (279.52 mM; 超声助溶 (<60°C); 吸湿的 DMSO 对产品的溶解度有显著影响, 请使用新开封的 DMSO)					
Preparing Stock Solutions		Solvent / Mass / Concentration	1 mg	5 mg	10 mg
		1 mM	2.7952 mL	13.9762 mL	27.9525 mL
		5 mM	0.5590 mL	2.7952 mL	5.5905 mL
	10 mM	0.2795 mL	1.3976 mL	2.7952 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。					
动物实验:					
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					



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	方案 一 请依序添加每种溶剂: 10% DMSO → 90% Corn Oil Solubility: ≥ 2.5 mg/mL (6.99 mM); 澄清溶液 此方案可获得 ≥ 2.5 mg/mL (饱和度未知) 的澄清溶液, 此方案实验周期在半个月以上的动物实验酌情使用。 以 1 mL 工作液为例, 取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中, 混合均匀。
参考文献	[1]. Chatterjee S, et al. A novel activator of CBP/p300 acetyltransferases promotes neurogenesis and extends memory duration in adult mice. J Neurosci. 2013;33(26):10698-10712. [2]. Singh A et al. Glucose derived carbon nanosphere (CSP) conjugated TTK21, an activator of the histone acetyltransferases CBP/p300, ameliorates amyloid-beta 1-42 induced deficits in plasticity and associativity in hippocampal CA1 pyramidal neurons. Aging Cell. 2022 Sep;21(9):e13675. [3]. Singh A, et al. Oral administration of a specific p300/CBP Lysine acetyltransferase activator induces synaptic plasticity and repairing spinal cord injury[J]. bioRxiv, 2023: 2023.10. 04.560982.

完整储备液配制表:

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。

可选溶剂	质量 溶剂体积 浓度	1 mg	5 mg	10 mg	25 mg
DMSO	1 mM	2.7952 mL	13.9762 mL	27.9525 mL	69.8812 mL
	5 mM	0.5590 mL	2.7952 mL	5.5905 mL	13.9762 mL
	10 mM	0.2795 mL	1.3976 mL	2.7952 mL	6.9881 mL
	15 mM	0.1863 mL	0.9317 mL	1.8635 mL	4.6587 mL
	20 mM	0.1398 mL	0.6988 mL	1.3976 mL	3.4941 mL
	25 mM	0.1118 mL	0.5590 mL	1.1181 mL	2.7952 mL
	30 mM	0.0932 mL	0.4659 mL	0.9317 mL	2.3294 mL
	40 mM	0.0699 mL	0.3494 mL	0.6988 mL	1.7470 mL
	50 mM	0.0559 mL	0.2795 mL	0.5590 mL	1.3976 mL
	60 mM	0.0466 mL	0.2329 mL	0.4659 mL	1.1647 mL
	80 mM	0.0349 mL	0.1747 mL	0.3494 mL	0.8735 mL
	100 mM	0.0280 mL	0.1398 mL	0.2795 mL	0.6988 mL