

Spadin TFA

Cat. No.:	HY-P1422A	
Molecular Formula:	C ₉₂ H ₁₄₃ F ₃ N ₂₆ O ₂₄	
Molecular Weight:	2126.36	
Sequence Shortening:	YAPLPRWSGPIGVSWGLR	YAPLPRWSGPIGVSWGLR (TFA salt)
Target:	Potassium Channel; 5-HT Receptor	
Pathway:	Membrane Transporter/Ion Channel; GPCR/G Protein; Neuronal Signaling	
Storage:	Sealed storage, away from moisture and light	
	Powder	-80°C 2 years -20°C 1 year
	* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture and light)	

SOLVENT & SOLUBILITY

In Vitro	DMSO : 100 mg/mL (47.03 mM; Need ultrasonic)				
	H ₂ O : 25 mg/mL (11.76 mM; Need ultrasonic)				
		Solvent Concentration	Mass		
	Preparing Stock Solutions	1 mM	1 mg	5 mg	10 mg
		5 mM	0.4703 mL	2.3514 mL	4.7029 mL
10 mM		0.0941 mL	0.4703 mL	0.9406 mL	
	10 mM	0.0470 mL	0.2351 mL	0.4703 mL	
Please refer to the solubility information to select the appropriate solvent.					
In Vivo	1. Add each solvent one by one: PBS Solubility: 50 mg/mL (23.51 mM); Clear solution; Need ultrasonic				
	2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.5 mg/mL (1.18 mM); Clear solution				
	3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.5 mg/mL (1.18 mM); Clear solution				
	4. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.5 mg/mL (1.18 mM); Clear solution				

BIOLOGICAL ACTIVITY

Description	Spadin TFA, a natural peptide derived from a propeptide released in blood, is a potent TREK-1 channel blocker with an IC ₅₀ value of 10 nM. Spadin TFA enhances dorsal raphe nucleus 5-HT neurotransmission in mice and induces hippocampal CREB activation and neurogenesis. Spadin TFA can be used for antidepressant research ^{[1][2]} .
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In Vitro	<p>Spadin TFA (100 nM; COS-7 cells) has inhibitory effect of spadin on the TREK-1 channel and blocks 63% of the TREK-1 current stimulated by arachidonic acid^[1].</p> <p>Spadin TFA (100 nM) blocks the TREK-1 channels activity in CA3 hippocampal neurons on brain slices of wild-type mice^[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p>																
In Vivo	<p>Spadin TFA (10 µM, 100 µL; i.p.; for 30 min; male C57Bl/6J and TREK-1 deficient mice) increases of the 5-HT neuron firing rate in the dorsal raphe nucleus (DRN)^[2].</p> <p>Spadin TFA (0.01-100 µM, 100 µL; ICV, i.p. and i.v.; daily, for 7 days; male C57Bl/6J and TREK-1 deficient mice) has anti-depressant behavior in mice^[2].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <table border="1" data-bbox="347 485 1516 722"> <tr> <td>Animal Model:</td> <td>Male C57Bl/6J and TREK-1 deficient mice^[2]</td> </tr> <tr> <td>Dosage:</td> <td>10 µM</td> </tr> <tr> <td>Administration:</td> <td>Intraperitoneal injection; for 30 min</td> </tr> <tr> <td>Result:</td> <td>Increased of the 5-HT neuron firing rate in the dorsal raphe nucleus (DRN).</td> </tr> </table> <table border="1" data-bbox="347 764 1516 1066"> <tr> <td>Animal Model:</td> <td>Male C57Bl/6J and TREK-1 deficient mice^[2]</td> </tr> <tr> <td>Dosage:</td> <td>0.01-100 µM</td> </tr> <tr> <td>Administration:</td> <td>Intracerebroventricular injection (100 nM), intraperitoneal injection (1-100 µM) and intravenous injection (0.01-1 µM); daily, for 7 days</td> </tr> <tr> <td>Result:</td> <td>Had any effect on mouse locomotion analyzed in short- or long-time after the drug injection.</td> </tr> </table>	Animal Model:	Male C57Bl/6J and TREK-1 deficient mice ^[2]	Dosage:	10 µM	Administration:	Intraperitoneal injection; for 30 min	Result:	Increased of the 5-HT neuron firing rate in the dorsal raphe nucleus (DRN).	Animal Model:	Male C57Bl/6J and TREK-1 deficient mice ^[2]	Dosage:	0.01-100 µM	Administration:	Intracerebroventricular injection (100 nM), intraperitoneal injection (1-100 µM) and intravenous injection (0.01-1 µM); daily, for 7 days	Result:	Had any effect on mouse locomotion analyzed in short- or long-time after the drug injection.
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CUSTOMER VALIDATION

- Biol Chem. 2023 Feb 14.

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REFERENCES

- [1]. Borsotto M, et, al. Targeting two-pore domain K(+) channels TREK-1 and TASK-3 for the treatment of depression: a new therapeutic concept. Br J Pharmacol. 2015 Feb;172(3):771-84.
- [2]. Mazella J, et, al. Spadin, a sortilin-derived peptide, targeting rodent TREK-1 channels: a new concept in the antidepressant drug design. PLoS Biol. 2010 Apr 13;8(4):e1000355.

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

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