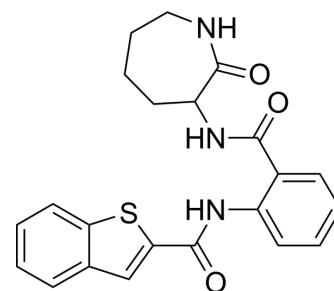


## ANA-12

<b>Cat. No.:</b>	HY-12497		
<b>CAS No.:</b>	219766-25-3		
<b>Molecular Formula:</b>	C <sub>22</sub> H <sub>21</sub> N <sub>3</sub> O <sub>3</sub> S		
<b>Molecular Weight:</b>	407.49		
<b>Target:</b>	Trk Receptor		
<b>Pathway:</b>	Neuronal Signaling; Protein Tyrosine Kinase/RTK		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	1 year
		-20°C	6 months



## SOLVENT & SOLUBILITY

### In Vitro

DMSO : 14.29 mg/mL (35.07 mM); ultrasonic and warming and heat to 60°C)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	2.4540 mL	12.2702 mL	24.5405 mL
	5 mM	0.4908 mL	2.4540 mL	4.9081 mL
	10 mM	0.2454 mL	1.2270 mL	2.4540 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: 1.43 mg/mL (3.51 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 1.43 mg/mL (3.51 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 40% PEG300 >> 5% Tween-80 >> 50% saline  
Solubility: 1 mg/mL (2.45 mM); Suspended solution; Need ultrasonic
- Add each solvent one by one: 5% DMSO >> 95% (20% SBE-β-CD in saline)  
Solubility: ≥ 0.45 mg/mL (1.10 mM); Clear solution
- Add each solvent one by one: 5% DMSO >> 95% corn oil  
Solubility: ≥ 0.45 mg/mL (1.10 mM); Clear solution

## BIOLOGICAL ACTIVITY

### Description

ANA-12 is a potent and selective TrkB antagonist with IC<sub>50</sub>s of 45.6 nM and 41.1 μM for the high and low affinity sites, respectively.

<b>IC<sub>50</sub> &amp; Target</b>	TrkB
<b>In Vitro</b>	ANA-12 (10 nM) prevents BDNF-induced neurite outgrowth in the TrkB-expressing cells, and completely abolishes the effects of BDNF at concentrations up to 10-100 $\mu$ M <sup>[1]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.
<b>In Vivo</b>	ANA-12 (0.5 mg/kg, i.p.) partially inhibits the total endogenous TrkB activity in the whole brain of mice. ANA-12, injected in mice, demonstrates anxiolytic and antidepressive activities at 0.5 mg/kg. ANA-12 (0.5, 1.0, and 2.0 mg/kg) does not affect neuron survival <sup>[1]</sup> . ANA-12 (0.5 mg/kg) shows antidepressant effects in lipopolysaccharide (LPS)-induced depression-like behavior. ANA-12 (0.5 mg/kg) significantly attenuates an increased immobility time in depressed mice. In the TST, FST, and SPT, ANA-12 (0.5 mg/kg) does not show antidepressant-like effects in the control mice <sup>[2]</sup> . ANA-12 (0.5 mg/kg, i.p.) reverses the diminished self-administration of cocaine in CocSired rats <sup>[3]</sup> . MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## PROTOCOL

### Animal Administration <sup>[2]</sup>

On the day of injection, ketamine (ketamine hydrochloride, 10 mg/kg), 7,8-dihydroxyflavone (7,8-DHF; 10 mg/kg), and ANA-12, N2-(2-[[[(2-oxoazepan-3-yl) amino]carbonyl]phenyl]benzo[b]thiophene-2-carboxamide (0.5 mg/kg) are prepared in vehicle of 17 % dimethyl sulfoxide (DMSO) in phosphate-buffered saline. The doses of ketamine (10 mg/kg), 7,8-DHF (10 mg/kg), and ANA-12 (0.5 mg/kg) are selected. All compounds are administered intraperitoneally (i.p.) to mice.  
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

## CUSTOMER VALIDATION

- Cell Metab. 2022 Nov 11;S1550-4131(22)00490-9.
- Nat Commun. 2023 Nov 16;14(1):7406.
- J Neuroinflammation. 2021 Aug 23;18(1):184.
- J Neuroinflammation. 2020 Jan 13;17(1):19.
- Transl Psychiatry. 2023 May 24;13(1):173.

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## REFERENCES

[1]. Cazorla M, et al. Identification of a low-molecular weight TrkB antagonist with anxiolytic and antidepressant activity in mice. J Clin Invest. 2011 May;121(5):1846-57.

[2]. Zhang JC, et al. Comparison of ketamine, 7,8-dihydroxyflavone, and ANA-12 antidepressant effects in the social defeat stress model of depression. Psychopharmacology (Berl). 2015 Dec;232(23):4325-35.

[3]. Vassoler FM, et al. Epigenetic inheritance of a cocaine-resistance phenotype. Nat Neurosci. 2013 Jan;16(1):42-7.

[4]. Fang X, et al. Brain-derived neurotrophic factor-TrkB signaling in the medial prefrontal cortex plays a role in the anhedonia-like phenotype after spared nerve injury. Eur Arch Psychiatry Clin Neurosci. 2018 Jun 7.

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

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