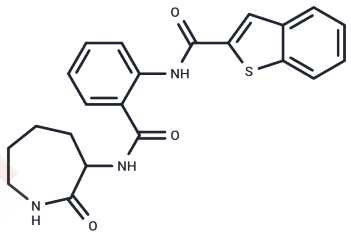
Data Sheet (Cat.No.T2359)

TargetMol

ANA-12

Chemical Properties



CAS No. : 219766-25-3

Formula: C22H21N3O3S

Molecular Weight: 407.49

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	ANA-12 is a potent and selective TrkB antagonist that exhibits anxiolytic and antidepressant activity in mice.
Targets(IC50)	Trk receptor
In vitro	In nnr5 PC12-TrkB cells, ANA-12 inhibits neurite outgrowth induced by brain-derived neurotrophic factor (BDNF) at concentrations as low as 10 nM. It selectively binds directly to the TrkB receptor, suppressing the downstream TrkB pathway without altering the functions of TrkA and TrkC. Furthermore, ANA-12 nullifies the effect of BDNF on increasing the inward current in DRG neurons.
In vivo	In male Sprague-Dawley rats, ANA-12 (3 μg/dose) inhibits the medial nucleus of the solitary tract (mNTS) BDNF's effect on reducing food intake. In male C57BL/6 mice, ANA-12 (0.5 mg/kg, intraperitoneally) demonstrates antidepressant effects against lipopolysaccharide-induced depressive-like behavior. In wild-type male mice, ANA-12 reverses ethanol consumption and induces D3 receptor downregulation; however, it is ineffective in D3R -/- mice.
Kinase Assay	ANA-12 Binding assay: Maxisorp ELISA 96-well plates are coated with various concentrations of Trk BECD -Fc, 20 mg/ml BSA, or 1 mg/mL IgG-Fc (polyclonal anti-TrkB) in a carbonate buffer (pH 9.6) overnight at 4°C. Plates are saturated with 0.5% BSA in PBS for 2 hours at room temperature and extensively washed in PBS-Tween 0.05%. Bodipy-ANA-12 is then incubated in 0.5% PBS-BSA for 1 hour at room temperature before the addition of BDNF in 0.5% PBS-BSA for another hour. After extensive washes in PBS-Tween 0.05%, the amount of bodipy-ANA-12 bound is quantified by fluorescence at 520 ± 10 nm. Detectability range for extrapolation analysis is assessed by coating ELISA plates with bodipy-ANA-12 and reading fluorescence at 520 ± 10 nm.
Cell Research	Modulation of neurite outgrowth by molecules is assessed in nnr5 PC12-TrkB, -TrkA, and -TrkC cells after addition of BDNF (1 nM), NGF (2 nM), and NT-3 (10 nM), respectively. The number of cells bearing neurites longer than 2 cells in diameter in each counting field is microscopically determined (2 fields per well, 3 wells per condition). Counting is performed blind each 24 hours for 3 days. (Only for Reference)

Solubility Information

Solubility	Ethanol: < 1 mg/mL (insoluble or slightly soluble), H2O: < 1 mg/mL (insoluble or slightly soluble), DMSO: 4.07 mg/mL (10 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.454 mL	12.2702 mL	24.5405 mL
5 mM	0.4908 mL	2.454 mL	4.9081 mL
10 mM	0.2454 mL	1.227 mL	2.454 mL
50 mM	0.0491 mL	0.2454 mL	0.4908 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

Cazorla M, et al. J Clin Invest. 2011, 121(5), 1846-1857.
Wang H, Wang N, Xu D, et al. Oxidation of multiple MiT/TFE transcription factors links oxidative stress to transcriptional control of autophagy and lysosome biogenesis. Autophagy. 2020, 16(9): 1683-1696
Chen W, et al. Eur J Neurosci. 2014, 39(9), 1439-1454.
Zhang JC, et al. Int J N europsychopharmacol. 2015, 18(4), 1-12
Spaeth AM, et al. Am J Physiol Endocrinol Metab. 2012 May 1;302(10):E1252-60.
Leggio GM, et al. Neuropsychopharmacology. 2014, 39(8), 22017-2028.
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.
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.