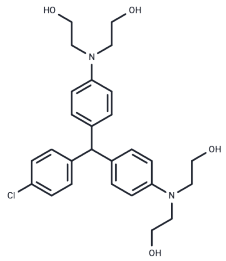
Data Sheet (Cat.No.T4496)

TargetMol

LM22B-10

Chemical Properties



CAS No. : 342777-54-2

Formula: C27H33ClN2O4

Molecular Weight: 485.01

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year
Actual storage temperature shall be subject to the COA.

Biological Description

Description	LM22B-10, an activator of the TrkB/TrkC neurotrophin receptor, can induce activation of TrkB, TrkC, ERK, and AKT both in vitro and in vivo.
Targets(IC50)	ERK,Akt,Trk receptor
In vitro	LM22B-10 exhibits superior neurotrophic activity, surpassing the highest levels of neurotrophic survival activity achieved by BDNF (53 ± 7.2% above BDNF at 0.7 nM) and NT-3 (91 ± 8.6% above NT-3 at 0.7 nM), with an EC50 value between 200-300 nM. At a concentration of 1000 nM, LM22B-10 significantly increases neurite length, achieving an average increment up to ~40 μM. Furthermore, LM22B-10 demonstrates dose-dependent binding to TrkB-Fc and TrkC-Fc across a concentration range of 250-2000 nM. It effectively inhibits the binding of BDNF to TrkB-expressing cells and NT-3 to TrkC-expressing cells, supporting cell survival and preferentially engaging TrkB and TrkC pathways. Notably, LM22B-10 promotes neurite outgrowth even in inhibitory conditions, a capability not displayed by BDNF or NT-3. It triggers distinct Trk and subsequent signaling activation patterns, as well as stimulating TrkB, TrkC, AKT, and ERK activation in cultured hippocampal neurons, establishing its unique and potent neurotrophic effects compared to those of BDNF and NT-3[1].
In vivo	LM22B-10, at a dosage of 0.5 mg/kg, stimulates TrkB, TrkC, AKT, and ERK pathways in C57BL/6J mice. At a higher concentration of 50 mg/kg administered intraperitoneally (i.p.), it induces enhanced phosphorylation at TrkBY817 and TrkCY820. Furthermore, LM22B-10 triggers synaptic activation of TrkB and TrkC, elevating both pre- and post-synaptic protein levels and augmenting spine density in elderly mice [1].
Cell Research	Mouse NIH-3T3 cells, mouse NIH-3T3 cells expressing TrkA (NIH-3T3-TrkA) or p75NTR (NIH-3T3-p75NTR), and NIH-3T3 cells expressing TrkB (NIH-3T3-TrkB) or TrkC (NIH-3T3-TrkC) are propagated in DMEM supplemented with 10% FBS and 200-400 μg/mL Geneticin (for Trk-expressing cells) or 400 μg/mL hygromycin (for p75NTR-expressing cells). Cells are seeded into 24-well plates (30,000 cells/well) and cultured in medium consisting of 50% PBS and 50% DMEM without supplements. Following exposure to growth factors (0.7 nM) or 1000 nM LM22B-10 for 72-96 h, cells are suspended in 50 μL lysis buffer, transferred to opaque 96-well culture plates and survival is measured using the ViaLight Assay.

Solubility Information

Solubility	Ethanol: 4.5 mg/mL (9.28 mM),Sonication is recommended. DMSO: 50 mg/mL (103.09 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+40% PEG300+5% Tween 80+45% Saline: 2 mg/mL (4.12 mM),Sonication is recommended. *Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may vary and should be modified based on specific experimental conditions.*

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	2.0618 mL	10.3091 mL	20.6181 mL
5 mM	0.4124 mL	2.0618 mL	4.1236 mL
10 mM	0.2062 mL	1.0309 mL	2.0618 mL
50 mM	0.0412 mL	0.2062 mL	0.4124 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.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

Yang T, et al. A small molecule TrkB/TrkC neurotrophin receptor co-activator with distinctive effects on neuronal survival and process outgrowth. Neuropharmacology. 2016 Nov;110(Pt A):343-61.

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