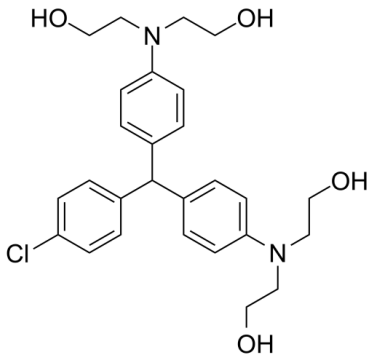
Data Sheet

Product Name:	LM22B-10
Cat. No.:	CS-7663
CAS No.:	342777-54-2
Molecular Formula:	$C_{27}H_{33}ClN_2O_4$
Molecular Weight:	485.01
Target:	Akt; ERK; Trk Receptor
Pathway:	MAPK/ERK Pathway; Neuronal Signaling; PI3K/Akt/mTOR; Protein Tyrosine Kinase/RTK; Stem Cell/Wnt
Solubility:	DMSO : ≥ 150 mg/mL (309.27 mM)



BIOLOGICAL ACTIVITY:

LM22B-10 is an activator of **TrkB/TrkC** neurotrophin receptor, and can induce **TrkB**, **TrkC**, **AKT** and **ERK** activation in vitro and in vivo. **In Vitro:** LM22B-10 exhibits maximum neurotrophic survival activity levels that are higher than those maximally achieved with 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 EC_{50} value of 200-300 nM. LM22B-10 (1000 nM) induces neurites of significantly larger average lengths, up to -40 μM. LM22B-10 (250-2000 nM) binds to TrkB-Fc and TrkC-Fc in a dose-dependent manner. LM22B-10 inhibits binding of BDNF to TrkB-expressing cells and NT-3 to TrkC-expressing cells. LM22B-10 promotes cell survival and functions preferentially through TrkB and TrkC. LM22B-10, but not BDNF or NT-3, promotes neurite outgrowth in an inhibitory environment. LM22B-10 induces patterns of Trk and downstream signaling activation that are distinct from those of BDNF and NT-3. LM22B-10 also induces TrkB, TrkC, AKT and ERK activation in hippocampal neurons in culture[1]. **In Vivo:** LM22B-10 (0.5 mg/kg) activates TrkB, TrkC, AKT and ERK in C57BL/6J mice. LM22B-10 (50 mg/kg, i,p,) shows increased phosphorylation at $TrkB^{Y817}$ and $TrkC^{Y820}$. LM22B-10 activates synaptic TrkB and TrkC and increases pre- and post-synaptic proteins and spine density in aged mice[1].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: LM22B-10 is dissolved in 0.04 N HCl prior to dilution (1:10,000) in culture medium.[1]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.

References:

[1]. 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.

CAIndexNames:

Ethanol, 2,2',2",2'''-[[(4-chlorophenyl)methylene]bis(4,1-phenylenenitrilo)]tetrakis-

SMILES:

ClC1=CC=C(C(C2=CC=C(N(CCO)CCO)C=C2)C3=CC=C(N(CCO)CCO)C=C3)C=C1

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

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