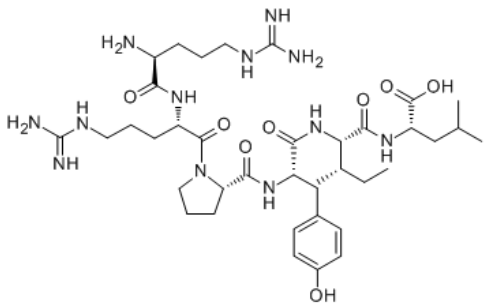
Product Data Sheet

Product Name: Neurotensin(8-13)
Cat. No.: GC36729

Chemical Properties

Cas. No.	60482-95-3		
Formula	$C_{38}H_{64}N_{12}O_8$	M.Wt	816.99
Solubility	Water: 50 mg/mL (61.20 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20°C for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		

Structure



Protocol

Cell experiment [1]:

Cell lines NCI-H1299 cells (human non-small cell lung cancer cell line)

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Preparation Method	NCI-H1299 cells were maintained in RPMI-1640 medium supplemented with 10% heat-inactivated fetal bovine serum (FBS) at 37°C, 5% CO_2. Cells were treated with Neurotensin(8-13) at concentrations ranging from 1nM to 1μM for 2.5 minutes to 24 hours.
Reaction Conditions	1nM to 1μM; 2.5 minutes to 24 hours
Applications	Neurotensin(8-13) induced transient tyrosine phosphorylation of focal adhesion kinase (FAK) in NCI-H1299 cells, with maximal phosphorylation observed 1–2.5 minutes after treatment. This effect was specific to the C-terminal fragment. The tyrosine phosphorylation was inhibited by the nonpeptide neurotensin receptor antagonist SR48692 (10μM). Neurotensin(8-13) also bound with high affinity to NCI-H1299 cells (IC_{50}=10nM) and stimulated clonal growth in soft agar assays, while SR48692 suppressed proliferation.

Animal experiment [2]:

Animal models	Normotensive rats
Preparation Method	Rats were anesthetized with Pentobarbital (55mg/kg; i.p.), and a cannula was inserted into the femoral vein for peptide administration. Neurotensin(8-13) was dissolved in 0.9% NaCl and injected intravenously at doses ranging from 0.1 to 100nmol/kg. Blood pressure and heart rate were monitored via the carotid artery.
Dosage form	0.1–100nmol/kg; i.v.; Single injection.

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Applications	Neurotensin(8-13) induced a dose-dependent decrease in diastolic blood pressure (ED_{50}=6.0nmol/kg) without altering heart rate. At higher doses (≥3nmol/kg), Neurotensin(8-13) elicited a triphasic depressor-pressor-depressor response, with effects lasting over 40 minutes at the highest dose (100nmol/kg). Tachyphylaxis was observed upon repeated administration.

References:
[1] Leyton J, Garcia-Marin L, Jensen RT, et al. Neurotensin causes tyrosine phosphorylation of focal adhesion kinase in lung cancer cells. Eur J Pharmacol. 2002 May 10;442(3):179-86.
[2] Di Paola ED, Richelson E. Cardiovascular effects of neurotensin and some analogues on rats. Eur J Pharmacol. 1990 Jan 17;175(3):279-83.

Background

Neurotensin(8-13) is the core active fragment of neurotensin and functions as a biologically active neurotensin receptor (NTSR1) agonist. By binding to NTSR1 with high affinity (Kd≈1–10nM), Neurotensin(8-13) activates the Gq/11 protein signaling pathway, thereby regulating intracellular calcium ion concentration and the activity of protein kinase C (PKC)[1-2]. Neurotensin(8-13) can be used in research related to pain management, psychiatric disorders (such as schizophrenia and depression), and tumor-targeted therapy[3-4].

In vitro, human colon adenocarcinoma HT-29 cells were treated with Neurotensin(8-13) (3–100nM) for 1–2 hours. Neurotensin(8-13) significantly induced rapid internalization mediated by the neurotensin receptor NTR1 and caused a time-dependent downregulation of NTR1 receptors on the cell surface[5]. Human non-small cell lung cancer cells NCI-H1299 were treated with Neurotensin(8-13) (100nM) for 2.5 minutes, which significantly induced tyrosine phosphorylation of focal adhesion kinase (FAK). After treating NCI-H1299 cells with Neurotensin(8-13) (10nM) for 24 hours, Neurotensin(8-13) promoted the proliferation of NCI-H1299 cells[6].

In vivo, normotensive rats were injected via the femoral vein with Neurotensin(8-13) (0.1–100nmol/kg). Neurotensin(8-13) dose-dependently reduced diastolic and systolic blood pressure without altering heart rate and showed no direct vasodilatory effect on isolated rat aortic rings[7].

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Product Data Sheet

Male Long-Evans rats received microinjections of Neurotensin(8-13) (3nmol in 0.5μl) into the ventral midbrain tegmental area. Neurotensin(8-13) significantly enhanced the reward effect of brain stimulation in the midbrain central gray matter 15–55 minutes after injection[8].

References:

[1] Gilbert JA, McCormick DJ, Pfenning MA, et al. Neurotensin(8-13): comparison of novel analogs for stimulation of cyclic GMP formation in neuroblastoma clone N1E-115 and receptor binding to human brain and intact N1E-115 cells. Biochem Pharmacol. 1989 Oct 1;38(19):3377-82.
[2] Cocioabă D, Fonseca AI, Leonte R, et al. Neurotensin (8-13) and Neuromedin N Neuropeptides Radiolabelling with Copper-64 Produced on Solid or Liquid Targets. Molecules. 2024 Mar 20;29(6):1390.
[3] Li XM, Von Euler G, Hedlund PB, et al. The C-terminal neurotensin-(8-13) fragment potently modulates rat neostriatal dopamine D2 receptors. Eur J Pharmacol. 1993 Mar 30;234(1):125-8.
[4] Pinnock RD, Woodruff GN. The non-peptide neurotensin receptor antagonist SR48692 is not a potent antagonist of neurotensin(8-13) responses of rat substantia nigra neurones in vitro. Neurosci Lett. 1994 May 19;172(1-2):175-8.
[5] García-Garayoa E, Bläuenstein P, Bruehlmeier M, et al. Preclinical evaluation of a new, stabilized neurotensin(8--13) pseudopeptide radiolabeled with (99m)tc. J Nucl Med. 2002 Mar;43(3):374-83.
[6] Leyton J, Garcia-Marin L, Jensen RT, et al. Neurotensin causes tyrosine phosphorylation of focal adhesion kinase in lung cancer cells. Eur J Pharmacol. 2002 May 10;442(3):179-86.
[7] Di Paola ED, Richelson E. Cardiovascular effects of neurotensin and some analogues on rats. Eur J Pharmacol. 1990 Jan 17;175(3):279-83.
[8] Rompré PP, Gratton A. Mesencephalic microinjections of neurotensin-(1-13) and its C-terminal fragment, neurotensin-(8-13), potentiate brain stimulation reward. Brain Res. 1993 Jul 9;616(1-2):154-62.

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