Product Data Sheet

Chemical Properties

Product Name: Apelin-13

Cas No.: 217082-58-1

M.Wt: 1550.8

Formula: C69H111N23O16S


Canonical SMILES: O=C([C@H](CCSC)NC1N(C(CNC([C@H](CCCN)NC([C@H](NC([C@H](CO)NC([C@H](CC(C)C)NC([C@H](CCCN(N)=N)NC([C@H]2N(C([C@H](NC([C@H](N)CCC(N)=O)O)CCCNC(N)=O)CCC2)=O)=O)=O)CC3=CN=CN3)=O)=O)CCC1)=O)N4[C@H](C(N[C@H](C(O)=O)CC5=CC=CC=C5)=O)CCC4

Solubility: ≥155.1mg/mL in DMSO

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.

Shopping Condition: Evaluation sample solution: ship with blue ice
All other available size: ship with RT, or blue ice upon request

Biological Activity

Targets: GPCR/G protein

Pathways: Apelin Receptor

Description:

IC50: 0.37 nM for GPCR

Apelin-13 is an endogenous ligand of the APJ receptor.
The apelin receptor APJ, one of a group of G-proteincoupled receptors (GPCR), have recently been paired with their cognate peptide ligands using “reverse pharmacology”, and functional evidence suggests a role for this receptor in the regulation of cardiovascular function, fluid homeostasis, and as a coreceptor for HIV infection.

In vitro: Apelin-13 was identified as an endogenous ligand of the APJ receptor, which could activate this G protein-coupled receptor with an EC50 value of 0.37 nM. In addition, the EC50 values for apelin-17 and apelin-36 have been found to be 2.5 and 20 nM, respectively [1].

In vivo: In a previous study, urethane anaesthetised, paralysed and ventilated male SD rats were used to investigate the action of apelin-13 directly microinjected into the nucleus tractus solitarius (NTS) and the rostral ventrolateral medulla (RVLM) on arterial pressure and phrenic nerve activity. Results showed that Apelin-13 microinjections into the NTS led to either apnea or decreased phrenic nerve discharge amplitude by up to 30%. In the RVLM, apelin-13 caused increase in phrenic nerve discharge amplitude depending on the exact site of injection [2].

Clinical trial: Previous clinical study showed that intrabrachial infusions of (Pyr1)apelin-13, acetylcholine, and sodium nitroprusside could cause forearm vasodilatation in patients and control subjects. Systemic infusions of (Pyr1)apelin-13 was able to increase cardiac index and lower mean arterial pressure and peripheral vascular resistance in patients and healthy control subjects but increased heart rate only in control subjects [3].

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### Protocol

#### Cell experiment:

- **Cell lines**: Vascular smooth muscle cells (VSMCs)
- **Preparation method**: Soluble in DMSO. General tips for obtaining a higher concentration: Please warm the tube at 37 °C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.
- **Reacting conditions**: Apelin-13 promoted VSMC proliferation via inducing phosphoinositide 3 kinase (PI3K)/Akt signaling transduction pathway. Apelin-13 (0.5-4 μM) promoted the expression of phospho-PI3K and phospho-Akt in dose- and time-dependent manner. Apelin-13 promoted VSMC proliferation through PI3K/Akt signaling transduction pathway.

#### Animal experiment [3]:

- **Animal models**: Wistar rat, Rodent (mouse and rat) models of myocardial I/R injury
- **Dosage form**: Intracerebroventricular (ICV) administration, intravenous (IV) injection of 10 nmol
- **Applications**: In rats, Apelin-13 had little effect on food intake, but dose-dependently increased drinking behaviour and water intake at 1 h. Apelin-13 (10 nmol) increased water intake. Apelin-13 (10 nmol) significantly increased plasma ACTH and corticosterone and decreased plasma prolactin, LH and FSH at 30 min. In rodent (mouse and rat) models of myocardial I/R injury, apelin-13 reduced infarct size by 43.1% and 32.7%. Intracerebroventricular (ICV) injection of 1 and 3 nmol of apelin-13 resulted in a reduction in food intake in both fed and fasted rats.
- **Other notes**: Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.
Reference:


Caution
FOR RESEARCH PURPOSES ONLY.
NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Shortterm storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.

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