

## Product Data Sheet

Product Name: C-type natriuretic peptide (1-22) (human, rat, swine)  
 Cat. No.: GC12034

### Chemical Properties

Cas. No. 127869-51-6

Chemical Name (4R,5E,8Z,10S,11Z,14Z,16S,17Z,19S,20Z,22S,23E,26Z,28S,29Z,31S,32E,34S,35Z,37S,38E,40S,41Z,43S,44Z,47Z,49S,50Z,52R)-52-((Z)-((3Z,5S,6Z,8S,9Z,11S,12Z)-14-amino-5-(4-aminobutyl)-1,4,7,10,13-pentahydroxy-8-(hydroxymethyl)-11-isobutyl-3,6,9,12-tetraazatetradec

SMILES CC[C@]([C@@]1([H])/C(O)=N/C/C(O)=N/[C@@]/C(O)=N/[C@@]/C(O)=N/[C@@]/C(O)=N/C/C(O)=N/[C@@]/C(O)=N/C/C(O)=N/[C@@](C(O)=O)([H])CSSC[C@@]/N=C(O)/C/N=C(O)/[C@]/N=C(O)/[C@]/N=C(O)/[C@]/N=C(O)/CN([H])CC(C)C([H])CO([H])CCCCN([H])/C(O)=N/[C@@]/C(O)=N/C

Formula  $C_{93}H_{157}N_{27}O_{28}S_3$

M.Wt 2197.61

Solubility  $H_2O$  : 50 mg/mL (22.75 mM; adjust pH to 3 with 0.5%CH<sub>3</sub>COOH)

Storage Desiccate 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 CHO cells

Preparation Method

To evaluate the human NPR (hNPR) agonist activities of the test compounds(C-type natriuretic peptide (1-22) (human, rat, swine)), Using Chinese hamster ovarian (CHO) cells stably expressing hNPR-A or hNPR-B. Each compound was added to the cells in duplicate and incubated for 15 min. Cells were lysed.

Reaction Conditions

0.01-1000nM C-type natriuretic peptide (1-22) (human, rat, swine)for 15 min

Applications

C-type natriuretic peptide (1-22) (human, rat, swine) increased cGMP production in CHO cells expressing human NPR-B in a concentration-dependent manner.

#### Animal experiment [1]:

Animal models

Sprague Dawley (SD) rats

Preparation Method

Rats received C-type natriuretic peptide (1-22) (human, rat, swine) or ASB20123 by intravenous (iv) injection into the tail vein or subcutaneous (sc) injection into the back.

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

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Dosage form	C-type natriuretic peptide (1-22) (human, rat, swine) iv (20 nmol/kg) or sc (50 nmol/kg)
Applications	C-type natriuretic peptide (1-22) (human, rat, swine) could be transported across the vascular wall and reach NPR-B in peripheral tissues.

### References:

[1]. Morozumi N, Yotsumoto T, Yamaki A, Yoshikiyo K, Yoshida S, Nakamura R, Jindo T, Furuya M, Maeda H, Minamitake Y, Kangawa K. ASB20123: A novel C-type natriuretic peptide derivative for treatment of growth failure and dwarfism. *PLoS One*. 2019 Feb 22;14(2):e0212680. doi: 10.1371/journal.pone.0212680. PMID: 30794654; PMCID: PMC6386482.

### Background

C-type natriuretic peptide (1-22) (human, rat, swine) is an endogenous peptide found in plasma and cerebrospinal fluid<sup>[2]</sup>. C-type natriuretic peptide (CNP) is a member of the natriuretic peptide (NP) family<sup>[3]</sup>. It is also a potent, endothelial-derived relaxant and growth-inhibitory factor<sup>[6]</sup>. C-type natriuretic peptide (1-22) (human, rat, swine) is an agonist for the natriuretic peptide receptor NPR2 (NPRB) and has an affinity for NPR3 (NPRC). C-type natriuretic peptide (1-22) (human, rat, swine) can inhibit L-type calcium current in cardiomyocytes, has anti-proliferation effect in cardiac fibroblasts in vitro, and can promote vasodilation<sup>[7]</sup>.

C-type natriuretic peptide (1-22) (human, rat, swine) increased cGMP production in CHO cells expressing human NPR-B in a concentration-dependent manner<sup>[1]</sup>.

C-type natriuretic peptide (1-22) (human, rat, swine) could be transported across the vascular wall and reach NPR-B in peripheral tissues<sup>[1]</sup>. exogenous CNP(1-22) improved endochondral ossification and accelerated bone growth in mice after constant intravenous infusion at a large dose only<sup>[4]</sup>. I.c.v. administration of C-type natriuretic peptide (1-22) (human, rat, swine) in a dose of 2 nmol induced an increase in the severity of picrotoxin-kindled convulsions 24 and 48 hrs after application of the peptide<sup>[5]</sup>.

### References:

- [1]. Morozumi N, Yotsumoto T, et.al. ASB20123: A novel C-type natriuretic peptide derivative for treatment of growth failure and dwarfism. *PLoS One*. 2019 Feb 22;14(2):e0212680. doi: 10.1371/journal.pone.0212680. PMID: 30794654; PMCID: PMC6386482.
- [2]. Minamino N, Makino Y, et.al. Characterization of immunoreactive human C-type natriuretic peptide in brain and heart. *Biochem Biophys Res Commun*. 1991 Aug 30;179(1):535-42. doi: 10.1016/0006-291x(91)91404-z. PMID: 1831979.
- [3]. Potter LR, Yoder AR, et.al. Natriuretic peptides: their structures, receptors, physiologic functions and therapeutic applications. *Handb Exp Pharmacol*. 2009;(191):341-66. doi: 10.1007/978-3-540-68964-5\_15. PMID: 19089336; PMCID: PMC4855512.
- [4]. Yasoda A, Kitamura H, et.al. Systemic administration of C-type natriuretic peptide as a novel therapeutic strategy for skeletal dysplasias. *Endocrinology*. 2009 Jul;150(7):3138-44. doi: 10.1210/en.2008-1676. Epub 2009 Mar 12. PMID: 19282381; PMCID: PMC2703521.
- [5]. Mazarati AM, Halász E, et.al. ANP(1-28), BNP(1-32) and CNP(1-22) increase the severity of picrotoxin-kindled seizure syndrome in rats. *Life Sci*. 1993;52(3):PL19-24. doi: 10.1016/0024-3205(93)90227-t. PMID: 8423706.
- [6]. Buckley MG, Jenkins GH, et.al. Circulating C-type natriuretic peptide is increased in orthotopic cardiac transplant recipients and associated with cardiac allograft vasculopathy. *Clin Sci (Lond)*. 2000 Nov;99(5):467-72. PMID: 11052928.
- [7]. Pejchalova K, Krejci P, et.al. C-natriuretic peptide: an important regulator of cartilage. *Mol Genet Metab*. 2007 Nov;92(3):210-5. doi: 10.1016/j.ymgme.2007.06.014. Epub 2007 Aug 6. PMID: 17681481.

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