

Product Data Sheet

Product Name: Parathyroid hormone (1-34) (human)

Cat. No.: GP10069

Chemical Properties

Cas. No. 52232-67-4

Formula $C_{181}H_{291}N_{55}O_{51}S_2$ M.Wt 4117.75

Solubility 100 mg/mL in Water ; 100 mg/mL in DMSO Storage -20°C, away from moisture and light

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.

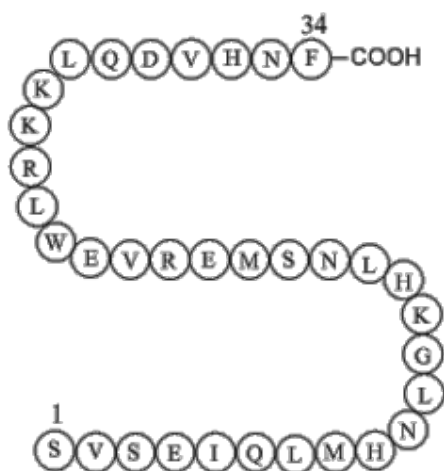
Caution: Product has not been fully validated for medical applications. For research use only.

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Structure



Protocol

Cell experiment [1]:

Cell lines Primary cultured human osteoblasts

Primary cultured human osteoblasts were cultured in the presence of 0, 1, 10, Preparation Method and 100nM Parathyroid hormone (1-34) (human) for 24h. The expression of Ang-1 mRNA was analyzed by RT-PCR.

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Reaction
Conditions 0, 1, 10, 100nM; 24h

Applications Parathyroid hormone (1-34) (human) induced an increase in Ang-1 mRNA expression. The Ang-1 mRNA levels, at 10nM Parathyroid hormone (1-34) (human), were 2-fold ($207\% \pm 6.4$) the levels of the control. Further increases in the concentration of Parathyroid hormone (1-34) (human) (to 100nM) did not further increase the levels of Ang-1 mRNA expression.

Animal experiment [2]:

Animal models Female New Zealand white rabbits

Preparation Method Rabbits were randomized into six groups of 7 animals each as follows: 4-week vehicle administration group, 4-week Parathyroid hormone (1-34) (human) (TPTD) administration group (20µg/kg/day, s.c.), 12-week vehicle administration group, 4-week TPTD administration+8-week vehicle administration group, 4-week TPTD administration+8-week lower-dose ibandronate (IBN) administration group (20µg/kg, s.c., every 4 weeks), and 4-week TPTD administration+8-week higher-dose IBN administration group (100µg/kg, s.c., every 4 weeks). After the 4- or 12-week experimental period, the cortical bone of the distal femoral diaphysis was processed for HR-QCT analysis.

Dosage form 20µg/kg/day, for 4 weeks; s.c.

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Applications

Parathyroid hormone (1-34) (human) administration increased the pore ratio, number, and density as well as the cortical area, thickness, and bone mineral content (BMC), without significant influencing the volumetric bone mineral density (BMD).

References:

- [1] Park J H, Song H I, Rho J M, et al. Parathyroid hormone (1-34) augments angiopoietin-1 expression in human osteoblast-like cells[J]. Experimental and clinical endocrinology & diabetes, 2006, 114(08): 438-443.
- [2] Iwamoto J, Seki A, Nango N. Influence of teriparatide and ibandronate on cortical bone in New Zealand white rabbits: A HR-QCT study[J]. Calcified tissue international, 2016, 99(5): 535-542.

Background

Parathyroid hormone (1-34) (human) is the N-terminal fragment (34 amino acids) of human Parathyroid hormone (PTH) and is an agonist of the Parathyroid hormone 1 (PTH1) receptor^[1]. PTH is essential for the regulation of extracellular Ca^{2+} and phosphate metabolism^[2]. Parathyroid hormone (1-34) (human) can be used to treat osteoporosis. Injection of Parathyroid hormone (1-34) (human) can increase bone formation and bone mass without causing hypercalcemia^[3, 4].

In vitro, Parathyroid hormone (1-34) (human) (0, 1, 10, 100nM) treatment of primary human osteoblasts for 24h induced an increase in angiopoietin 1 (Ang-1) mRNA expression. The 10nM dose increased the expression of Ang-1 mRNA by 2-fold ($207\% \pm 6.4$), but increasing the dose to 100nM did not further increase the expression level of Ang-1 mRNA^[5].

In vivo, subcutaneous administration of Parathyroid hormone (1-34) (human) (20µg/kg/day) to mature rabbits for 4 weeks increased the cortical bone porosity, number and density, as well as the cortical area, thickness and bone mineral content (BMC) of the distal femoral shaft, but had no significant effect on volumetric bone mineral density (BMD)^[6].

References:

- [1] Hoare S R J, Usdin T B. Molecular mechanisms of ligand recognition by parathyroid hormone 1

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- [2] Goltzman D. Physiology of parathyroid hormone[J]. Endocrinology and Metabolism Clinics, 2018, 47(4): 743-758.
- [3] Kim E S, Keating G M. Recombinant human parathyroid hormone (1–84): a review in hypoparathyroidism[J]. Drugs, 2015, 75: 1293-1303.
- [4] Neer R M, Arnaud C D, Zanchetta J R, et al. Effect of parathyroid hormone (1-34) on fractures and bone mineral density in postmenopausal women with osteoporosis[J]. New England journal of medicine, 2001, 344(19): 1434-1441.
- [5] Park J H, Song H I, Rho J M, et al. Parathyroid hormone (1-34) augments angiopoietin-1 expression in human osteoblast-like cells[J]. Experimental and clinical endocrinology & diabetes, 2006, 114(08): 438-443.
- [6] Iwamoto J, Seki A, Nango N. Influence of teriparatide and ibandronate on cortical bone in New Zealand white rabbits: A HR-QCT study[J]. Calcified tissue international, 2016, 99(5): 535-542.

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