

Recombinant Human Glycoprotein Hormone Alpha 2, His-tagged

Cat. No. GPHA2-131H **Lot. No.** (See product label)

SPECIFICATION

Product Overview

Recombinant Human GPHA2 produced in *E. Coli* is a single, non-glycosylated, polypeptide chain containing 120 amino acids and having a total molecular mass of 13.28 kDa. The Thyrostimulin contains His tag which consists of 14 additional amino acids. The amino acid sequence of the recombinant human Thyrostimulin beta subunit is 100% homologous to the amino acid sequence of the human Thyrostimulin beta subunit without signal sequence. (N-terminal 24AA). Thyrostimulin is purified by proprietary chromatographic techniques.

Species

Human

Source

E.coli

Description

Human thyrostimulin ranks among the glycoprotein hormone family. These hormones consist of two subunits, the common alpha- and specific beta-subunits, which associate noncovalently to form a heterodimer. The alpha-subunit combines with four distinct beta-subunits giving rise to four biologically active hormones in human: FSH, LH, TSH, and CG. FSH, LH, and TSH, mainly expressed in the anterior pituitary, are essential for coordinated endocrine regulation in the hypothalamus- pituitary axis and show to activate specific G protein-coupled receptors in the thyroid (TSH receptor) and gonads (LH and FSH receptors), respectively. The heterodimeric glycoprotein hormones have only been identified in vertebrates and are highly conserved in organisms from primitive rayfin fish (Chondrostei) to human in both primary sequences and functional characteristics. Corticotroph-derived glycoprotein hormone

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(CGH), also referred to as thyrostimulin, is a noncovalent heterodimer of glycoprotein hormone alpha 2 (GPHA2) and glycoprotein hormone beta 5 (GPHB5). Recombinant A2/B5 heterodimeric glycoproteins activates human TSH receptors, but not LH and FSH receptors, and shows high affinity to TSH receptors in a radioligand receptor assay. The heterodimer also stimulates cAMP production and thymidine incorporation by cultured thyroid cells and increases serum thyroxine levels in TSH-suppressed rats in vivo. This new heterodimeric glycoprotein hormone was named as thyrostimulin based on its thyroid-stimulating activity. The expression of thyrostimulin in the anterior pituitary known to express TSH receptors suggested a paracrine mechanism.

Amino Acid Sequence

MRGSHHHHHH GMAS QEAVIPG CHLHPFNVTV RSDRQGTCQG SHVAQACVGH
CESSAFPSRY SVLVASGYRH NITSVSQCCT ISGLKKVKVQ LQCVGSRREE
LEIFTARACQCDMCRLSRY

Physical Appearance

Filtered White lyophilized (freeze-dried) powder.

Form

GPHA2 filtered (0.4µm) and lyophilized from 0.5 mg/ml in 0.05M Acetate buffer pH 4.

Purity

Greater than 95.0% as determined by: (a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.

Solubility

It is recommended to add 0.1M Acetate buffer pH4 to prepare a working stock solution of ~ 0.5 mg/ml and let the lyophilized pellet dissolve completely. For conversion into higher pH value, we recommend intensive dilution by relevant buffer to a concentration of 10µg/ml. In higher concentrations the solubility of this protein is limited. Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.

Stability

Lyophilized Thyrostimulin although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution GPHA2 should be stored at 4°C

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between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Please prevent freeze-thaw cycles.

GENE INFORMATION

Gene Name	GPHA2 glycoprotein hormone alpha 2 [Homo sapiens]
Synonyms	GPHA2; glycoprotein hormone alpha 2; A2; GPA2; ZSIG51; MGC126572; hormone activity; glycoprotein alpha 2; cysteine knot protein; thyrostimulin subunit alpha; ZSIG51; Putative secreted protein ZSIG51; Glycoprotein hormone alpha
Gene ID	170589
mRNA Refseq	NM_130769
Protein Refseq	NP_570125
MIM	609651
UniProt ID	Q96T91
Chromosome Location	11q13.1
Function	hormone activity

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