

## Product Information

### Somatotropin human, recombinant expressed in *E. coli*

Catalog Number **S4776**  
Storage Temperature  $-20\text{ }^{\circ}\text{C}$

Synonyms: growth hormone; GH; STH

#### Product Description

Somatotropin, or growth hormone (GH), is a protein hormone produced by the anterior pituitary gland situated at the base of the brain and stored in secretory granules. It is the most abundantly produced hormone from the pituitary gland. GH is a member of a family of growth factors that includes prolactin, placental lactogens, proliferins, and somatolactin. Human GH is a pleiotropic cytokine that exerts its biological actions by binding to the transmembrane GH receptor, which is present in many cell types.<sup>1,2</sup> By alternative splicing, at least four isoforms of GH have been identified (Accession P01241).

Somatotropin has been shown to be regulated by both growth hormone releasing hormone (GHRH) and somatostatin. Both of these hormones are produced by the hypothalamus of the brain. GHRH has been shown to cause the secretion of somatotropin, while somatostatin inhibits the release of GH. This regulatory feedback mechanism keeps the levels of GH at the appropriate level.

GH has been shown to regulate growth and metabolism by binding to receptors on the surface of liver cells. This leads to the release of insulin-like growth factor-1 (IGF-1), which acts directly on the ends of the long bones, promoting their growth. GH has also been shown to have direct effects on growth that is independent of IGF-1. GH, directly or indirectly via IGF-1, can act on B cells, T cells, NK cells, macrophages, and neutrophils to exert immunomodulatory activities.<sup>3</sup>

GH is involved in regulation of muscle growth through the action of IGF-1 on myocytes. GH also mobilizes fat for energy usage, while at the same time sparing proteins from being utilized. It binds to GH receptors on the surface of adipocytes, leading to lipid release into the blood stream and blockage of uptake for storage.<sup>4</sup>

Recombinant, human somatotropin is produced from a DNA sequence encoding the mature isoform of human growth hormone (Phe<sup>27</sup>-Phe<sup>217</sup>).<sup>5</sup> It is composed of a 192 amino acid residue methionyl form of recombinant, human growth hormone isoform 1.

This product is lyophilized from a 0.2  $\mu\text{m}$  filtered solution of TBS (20 mM Tris, pH 8.5, 0.15 M sodium chloride) containing 50  $\mu\text{g}$  of bovine serum albumin per 1  $\mu\text{g}$  of somatotropin.

Molecular mass:  $\sim$ 22 kDa (predicted)

The biological activity is measured in a cell proliferation assay using the rat lymphoma, Nb2-11.<sup>6</sup>

Purity:  $\geq$ 95% by SDS-PAGE.

Endotoxin:  $\leq$ 1.0 EU (endotoxin units) per 1  $\mu\text{g}$  of the somatotropin (LAL method)

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

It is recommended that sterile PBS containing at least 0.1% human serum albumin or bovine serum albumin be added to the vial to prepare a stock solution of no less than 10  $\mu\text{g}/\text{mL}$ .

#### Storage/Stability

Store lyophilized product at  $-20\text{ }^{\circ}\text{C}$  or below.

Upon reconstitution, the product can be stored under sterile conditions at  $2\text{--}8\text{ }^{\circ}\text{C}$  for up to one month. For extended storage, aliquot the reconstituted product and store at  $-20\text{ }^{\circ}\text{C}$  or below.

## References

1. Goffin, V., et al., *Endocrine Rev.*, **17**, (385-410 (1996).
2. Le Roith, D., et al., *Endocrine Rev.*, **22**, (53-74) (2001).
3. Welniak, L.A., et al., *J. Leukoc. Biol.*, **71**, (381-387) 2002.
4. Chen, H.C., et al., *J. Biol. Chem.*, **245**, 3402-3406 (1970).
5. Roskam, W., et al., *Nucleic Acids Res.*, **7**, 305-320 (1979).
6. Gout, P.W., et al., *Cancer Research*, **40**, 2433-2436.

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