Recombinant Mouse TSH alpha/beta Heterodimer

Catalog Number: 8885-TH/CF

DESCRIPTION

Source

Chinese Hamster Ovary cell line, CHO-derived

N-terminal Sequence Analysis	Phe21 (mTSHβ)
Predicted Molecular Mass	25 kDa

SPECIFICATIONS

SDS-PAGE	35-41 kDa, reducing conditions
Activity	Measured by its ability to induce cAMP accumulation in HEK293 human embryonic kidney cells transfected with human TSH R. Morgenthaler, N.G. *et al.* (1998) Horm. Metab. Res. **30**:162. The ED_{50} for this effect is 0.015-0.15 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE with silver staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Thyroid Stimulating Hormone (TSH), also known as Thyrotropin, is a 28 kDa heterodimer belonging to the glycoprotein hormone family. It is composed of noncovalently linked glycosylated α and β chains. The α subunit (CGα) is also a component of Follicle-Stimulating Hormone, Luteinizing Hormone, and Chorionic Gonadotropin. The unique β subunit confers the protein's specific biological action and is responsible for the interaction with its receptor (1-3). The approximately 14 kDa mouse CGα subunit shares 73% and 97% amino acid (aa) sequence identity with the human and rat orthologs, respectively. The approximately 15 kDa mouse TSHβ subunit shares 89% and 92% aa sequence identity with the human and rat orthologs, respectively. Multiple isoforms of TSH with differing bioactivity and half-lives exist due to differences in the post-translational glycosylation and sialylation modifications of its subunits (1, 4). TSH is produced and secreted by the anterior pituitary gland. Its secretion is controlled by Thyrotropin-Releasing Hormone (TRH) from the hypothalamus. TSH travels to the thyroid gland and binds to the TSH Receptor to stimulate production of Thyroxine (T4), which is converted in peripheral tissues to Triiodothyronine (T3), a more biologically potent form of the thyroid hormone (1, 4, 5). TSH secretion is also controlled by plasma T3 and T4 via a negative feedback mechanism and by the neurotransmitters dopamine and Somatostatin (4, 5). Serum TSH levels are often assessed to evaluate thyroid function (4, 5). TSH has also been shown to be produced by bone marrow and is believed to have a direct effect on skeletal homeostasis by promoting bone strength and quality (6-9). Additionally, serum TSH levels have been shown to be decreased in the elderly (10).

References:

1. Szkudlinshi, M.W. *et al.* (2002) Physiol. Rev. **82**:473.
2. Farid, N.R. and M.W. Szkudlinski (2004) Endocrinology **145**:4048.
3. Cahoreau, C. *et al.* (2015) Front. Endocrinol. (Lausanne) **6**:26.
4. Roelfsema, F. and J.D. Veldhuis (2013) Endocr. Rev. **34**:619.
5. Winter, W.E. and M.R. Signorino (2001) Ann. Clin. Lab. Sci. **31**:221.
6. Klein, J.R. and H.C. Wang (2004) J. Exp. Biol. **207**:55.
7. Abe, E. *et al.* (2003) Cell **115**:151.
8. Sun, L. *et al.* (2006) Ann. N.Y. Acad. Sci. **1068**:309.
9. Sendak, R.A. *et al.* (2007) Int. Orthop. **31**:753.
10. Peeters, R.P. (2008) Hormones **7**:28.

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Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449