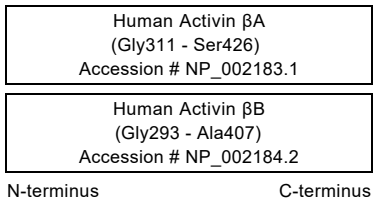
Recombinant Human Activin AB

Catalog Number: 1066-AB/CF

DESCRIPTION

Source

Chinese Hamster Ovary cell line, CHO-derived human Activin AB protein



N-terminal Sequence Analysis	Gly311 (βA subunit) & Gly293 (βB subunit)
Structure / Form	Disulfide-linked heterodimer
Predicted Molecular Mass	12.8 kDa (βA subunit) and 13 kDa (βB subunit)

SPECIFICATIONS

SDS-PAGE	14 kDa, reducing conditions
Activity	Measured by its ability to induce hemoglobin expression in K562 human chronic myelogenous leukemia cells. Schwall, R.H. *et al.* (1991) Method Enzymol. **198**:340. The ED_{50} for this effect is 0.2-1.2 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in 4 mM HCl.
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

Activins, members of the TGF-β superfamily, are disulfide-linked dimeric proteins that were originally purified from gonadal fluids as proteins that stimulated pituitary follicle stimulating hormone (FSH) release. Activin proteins have since been shown to have a wide range of biological activities including: mesoderm induction, neural cell differentiation, bone remodeling, hematopoiesis and roles in reproductive physiology. Activins are produced as precursor proteins with an amino-terminal propeptide that is cleaved to release the carboxy-terminal bioactive ligands. Activins are homodimers or heterodimers of the various β subunit isoforms. Five β subunits (mammalian β_A, β_B, β_C, β_E and *Xenopus* β_D) have been cloned. The nomenclature reflects the subunit composition of the proteins: Activin A (β_A - β_A), Activin B (β_B - β_B), and Activin AB (β_A - β_B). Activin A, Activin B, and Activin AB are present in gonadal tissues and are biologically active proteins. However, little is known about the contribution of the other β subunits to Activin formation and function since knock-outs of β_C and β_E in mice do not exhibit a phenotype.

At the amino acid sequence level, the mature human β_A subunit is 100% identical to mouse β_A, while the mature human and mouse β_B subunits share 98% identity. The mature β_A and β_B subunits share less than 80% amino acid identity. Mice with targeted mutations of β_A, β_B, or both genes do not show mesodermal defects, indicating Activin is not involved in mesoderm formation in mammals as it is in *Xenopus*. Also, the double homozygous mutants have the whole spectrum of defects associated with either mutation alone, suggesting that Activin β_A and β_B do not compensate for one another, nor do they have overlapping functions. Similar to other TGF-β family members, Activins exert their biological activities through binding to the heterodimeric complex composed of two membrane spanning serine-threonine kinases designated type I and type II. Activin binds directly to ACT RII, the complex then associates with ACT RI and initiates signaling through the SMADs.

References:

1. Woodruff, T.K. (1998) Biochemical Pharmacology **55**:953.
2. Ying, S.Y. *et al.* (1997) Proc. Soc. Exp. Biol. Med. **214**:114.
3. Chang, H. *et al.* (2001) Mol. Cell. Endocrinology **180**:39.

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