Follistatin/FST Protein, Human (288a.a, HEK293, His)

Cat. No.:	HY-P70315
Synonyms:	rHuFollistatin/FST; follistatin isoform FST317; Follistatin; FS; FSActivin-binding protein; FST
Species:	Human
Source:	HEK293
Accession:	P19883 (G30-N317)
Gene ID:	10468
Molecular Weight:	33-42 kDa

PROPERTIES

AA Sequence	G N C W L R Q A K N G R C Q V L Y K T E L S K E E C C S T G R L S T S W T E E D V N D N T L F K W M I F N G G A P N C I P C K E T C E N V D C G P G K K C R M N K K N K P R C V C A P D C S N I T W K G P V C G L D G K T Y R N E C A L L K A R C K E Q P E L E V Q Y Q G R C K K T C R D V F C P G S S T C V V D Q T N N A Y C V T C N R I C P E P A S S E Q Y L C G N D G V T Y S S A C H L R K A T C L L G R S I G L A Y E G K C I K A K S C E D I Q C T G G K K C L W D F K V G R G R C S L C D E L C P D S K S D E P V C A S D N A T Y A S E C A M K E A A C S S G V L L E V K H S G S C N
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 μm filtered solution of PBS, pH 7.4.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US;may vary elsewhere.

DESCRIPTION

Background	Follistatin is first described as a follicle-stimulating hormone inhibiting substance present in ovarian follicular fluid. Follistatin binds activin A and myostatin with low nanomolar (nM) affinity, completely surrounds the ligand occluding all of the receptor binding sites and binds to the ligand[1][2]. Mature human Follistatin shares 97% amino acid sequence identity with mouse and rat Follistatin.

Follistatin is a 32-35-kDa glycoprotein composed of four domains including an N-terminal domain (ND) followed by three Follistatin domains (FSD1, FSD2, and FSD3). C-terminal splicing of Follistatin can occur to generate various isoforms including FS288 and FS315. Follistatin neutralizes the TGFβ ligands, myostatin and activin A, by forming a nearly irreversible non-signaling complex by surrounding the ligand and preventing interaction with TGFβ receptors. In humans, the gene encoding Follistatin is located on chromosome 5q11.2. The Follistatin protein contains a TGF-β binding site where activins, bone morphonegic proteins (BMPs) and growth differentiation factors (GDFs) are bound with high affinity and thereby neutralised. The ligand binding site for Follistatin overlaps with the type I and type II receptor binding sites for these ligands. Follistatin also contains a heparin binding site where proteoglycans in the extracellular matrix can bind, and therefore Follistatin is believed to bind the extracellular matrix. There are two major isoforms of Follistatin, FST288, which is anchored to the cell surface by interactions with heparin sulfate proteoglycans, and FST315, which is the predominant form found in circulation. The two isoforms arise from alternative splicing; the 315 isoform includes a 27 amino acid acidic C-terminal tail, which Follistatin 288 does not have. The acidic tail on Follistatin 315 neutralises the heparin binding site, thereby inhibiting the binding of Follistatin 315 to the extracellular matrix[1][2][3].

Follistatin as a liver-derived protein under the regulation of glucagon-to-insulin ratio suggests a relation to energy metabolism. In humans, aberrant expression of FST and activins are implicated in infertility. Follistatin is a potent tissue regulator in the gonad, pituitary gland, pregnancy membranes, vasculature, and liver[1][3].

REFERENCES

[1]. Jakob Schiøler Hansen, et al. Circulating follistatin in relation to energy metabolism. Mol Cell Endocrinol. 2016 Sep 15;433:87-93.

[2]. Ryan G Walker, et al. Heparin-mediated dimerization of follistatin. Exp Biol Med (Maywood). 2021 Feb;246(4):467-482.

[3]. D J Phillips, et al. Follistatin: a multifunctional regulatory protein. Front Neuroendocrinol. 1998 Oct;19(4):287-322.

[4]. Jung-Chien Cheng, et al. FOXL2-induced follistatin attenuates activin A-stimulated cell proliferation in human granulosa cell tumors. Biochem Biophys Res Commun. 2014 Jan 10;443(2):537-42.

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