

## Animal-Free Activin B Protein, Human (His)

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| Cat. No.:         | HY-P700013AF                                |
| Synonyms:         | Activin Beta B; INHBB; inhibin beta B chain |
| Species:          | Human                                       |
| Source:           | E. coli                                     |
| Accession:        | P09529 (G293-407A)                          |
| Gene ID:          | 3625  |
| Molecular Weight: | Approximately 13.75 kDa                     |

### PROPERTIES

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| AA Sequence         | <p>M G L E C D G R T N    L C C R Q Q F F I D    F R L I G W N D W I    I A P T G Y Y G N Y</p> <p>C E G S C P A Y L A    G V P G S A S S F H    T A V V N Q Y R M R    G L N P G T V N S C</p> <p>C I P T K L S T M S    M L Y F D D E Y N I    V K R D V P N M I V    E E C G C A</p> |
| Biological Activity | Measure by its ability to induce hemoglobin expression in K562 cells. The ED <sub>50</sub> for this effect is <0.7 ng/mL. The specific activity of recombinant human Activin B is > 1.5 x 10 <sup>6</sup> IU/mg   |
| Appearance          | Lyophilized powder.   |
| Formulation         | Lyophilized from a solution containing 1X PBS, pH 8.0.  |
| Endotoxin Level     | <0.1 EU per 1 µg of the protein by the LAL method.  |
| Reconstitution      | It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O.   |
| 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

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| Background | <p>Activins, members of the TGF-β superfamily, are first isolated from porcine ovarian follicular fluid and identified as activating factors for the release of follicle stimulating hormone. Activin B found in most tissues including placenta, reproductive organs, bone marrow, and brain. Activin B is a regulator of inflammation and immunity, and also involved in cancer or wound healing processes<sup>[1][2][3][4]</sup>.</p> <p>Activin B is highly conserved across species, with mouse, rat and human Activin B demonstrating &gt;97% sequence homology. Activins exist in three basic molecular forms composed of two inhibin β subunits: activin A (βAβA), activin B (βBβB), and activin AB (βAβB), and their receptors are ActRIA, ActRIB, ActRII A, and ActRIIB. Different additional roles have since been</p> |
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identified for these proteins, including broad and complex effects on cell growth and differentiation, regulation of embryogenesis, development of the reproductive system, wound healing, stem cell differentiation and regulation of immune response. Activins exert their biological functions through the serine/threonine protein kinase (MAPKs) signaling pathways. Activin B might also signal through the type IC activin receptors (ACVR1C (ALK7)). The type I receptor initiates a signaling cascade by activating a phosphorylation cascade through SMAD2/3 that complexes with SMAD4 and translocates to the cell nucleus to modulate gene transcription. The effects of activin are antagonized by inhibin, which acts by blocking activin binding to its receptors and by follistatin<sup>[1][2][3]</sup>.

Activin B stimulates cell proliferation at the site of skin injury and promotes wound healing through the RhoA-Rock-JNK-cJun signaling pathway. Activin B production is increased in some cell types in response to inflammatory stimuli, most notably hepatic stellate cells, pituitary cells, and microglial cells. Activin B regulates cellular migration by inducing actin stress fiber formation. In addition, Activin B treatment can promote the adhesion, migration and invasion of type II endometrial cancer cells by up-regulating integrin  $\beta$ 3 in a SMAD-dependent manner<sup>[1][3][4]</sup>.

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## REFERENCES

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- [2]. J M Young, et al. Activin B is produced early in antral follicular development and suppresses thecal androgen production. *Reproduction*. 2012 May;143(5):637-50.
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- [4]. Sabine Gravelina, et al. Potential of Activin B as a Clinical Biomarker in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS). *Biomolecules*. 2021 Aug 11;11(8):1189.
- [5]. Qin Jia, et al. Activin B promotes initiation and development of hair follicles in mice. *Cells Tissues Organs*. 2013;198(4):318-26.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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