

## IGFBP-3 Protein, Cynomolgus, Recombinant (His)

### General Information

Synonyms:	insulin-like growth factor binding protein 3
Protein Construction:	A DNA sequence encoding the cynomolgus IGFBP3 (Gly28-Lys291) was expressed with a polyhistidine tag at the N-terminus. Predicted N terminal: His
Species:	Cynomolgus
Expression Host:	HEK293 Cells
Molecular Weight:	31.1 kDa (predicted); 41-44 kDa (reducing conditions)

### QC Testing

Biological Activity:	Measured by its ability to inhibit the biological activity of IGFII on MCF7 human breast adenocarcinoma cells (Karey, K.P. et al. (1988) Cancer Research 48:4083.). The ED50 for this effect is typically 0.15-0.75 µg/mL in the presence of 14 ng/mL human IGFII.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/µg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 µm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

#### Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

#### Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

#### Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

The Insulin-like Growth Factor (IGF) signaling system plays a central role in cellular growth, differentiation, and proliferation. IGFBP3 is the most abundant IGF binding protein in human serum and is a growth inhibitory, apoptosis-inducing molecule, capable of acting via IGF-dependent and IGF-independent mechanisms. It appears to function both by cell cycle blockade and the induction of apoptosis. IGFBP3 can be transported to the nucleus by an importin beta mediated mechanism, where it has been shown to interact with the retinoid X receptor alpha and

possibly other nuclear elements. IGFBP3 antiproliferative signaling appears to require an active transforming growth factor-beta (TGF-beta) signaling pathway, and IGFBP3 stimulates phosphorylation of the TGF-beta signaling intermediates Smad2 and Smad3. IGFBP3 has IGF-independent roles in inhibiting cell proliferation in cancer cell lines. Nuclear transcription factor, retinoid X receptor (RXR)-alpha, and IGFBP3 functionally interact to reduce prostate tumor growth and prostate-specific antigen in vivo. Several clinical studies have proposed that individuals with IGFBP3 levels in the upper range of normal may have a decreased risk for certain common cancers. This includes evidence of a protective effect against breast cancer, prostate cancer, colorectal cancer, and lung cancer. Moreover, IGFBP3 inhibits insulin-stimulated glucose uptake into adipocytes independent of IGF.

### Reference

Baxter RC. (2001) Signalling pathways involved in antiproliferative effects of IGFBP-3: a review. *Mol Pathol.* 54(3): 145-8.

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Ali O, et al. (2003) Epidemiology and biology of insulin-like growth factor binding protein-3 (IGFBP-3) as an anti-cancer molecule. *Horm Metab Res.* 35(11-12): 726-33.

Yamada PM, et al. (2009) Perspectives in mammalian IGFBP-3 biology: local vs. systemic action. *Am J Physiol Cell Physiol.* 296(5): C954-76.

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