

human cell expressed TGF-beta 1^{HGX}

Source	A DNA sequence encoding the human TGF-beta 1 protein sequence (containing the signal peptide, latency associated peptide and the mature TGF-beta 1 sequence) was expressed in modified human 293 cells. The latency associated peptide is cleaved from the mature protein and removed during purification.
Molecular Mass	Symansis TGF-beta 1 ^{HGX} migrates at approximately 12-15 kDa in SDS-PAGE. This compares with the predicted molecular mass of 12.8 kDa.
pI	Symansis TGF-beta 1 ^{HGX} separates into a number of isoforms with a pI from 8.5 to 10 in 2D PAGE due to post-translational modifications. This compares with the unmodified TGF-beta 1 that has a predicted pI of 8.6.
Purity	>95%, as determined by SDS-PAGE and visualized by silver stain.
Formulation	When reconstituted in 0.5 ml reconstitution buffer, the solution will contain 1% human serum albumin (HSA) and 10% trehalose.
Reconstitution	It is recommended that 0.5 ml of 5 mM HCl or 10mM acetic acid be added to the vial.
Storage	Lyophilized products should be stored at 2 to 8°C. Following reconstitution short-term storage at 4°C is recommended and longer-term storage of aliquots at -18 to -20°C. Repeated freeze thawing is not recommended.
Activity	The ED ₅₀ of TGFb-1 ^{HGX} is typically 0.1 - 0.5 ng/ml as measured in a cytotoxicity assay using the Mv1Lu mink lung cell line.
Theoretical Sequence	ALDTNYCFSSSTEKNCCVRQLYIDFRKDLGWKWIHEPKGYHANFCLGPCPYIWSLDTQYSKVLALYNQHNP GASAAPCCVPQALEPLPIVYYVGRKPKVEQLSNMIVRSCKCS

Background Information

TGF-beta 1 is a member of the TGF beta superfamily, which includes at least five other isoforms. It is synthesized as a 390 amino acid glycoprotein and contains a 29 amino acid signal sequence and a 249 amino acid latency associated pro-peptide sequence.

TGF-beta 1 is a pleiotropic cytokine that regulates various functions, such as proliferation and differentiation, of immune and non-immune somatic cells via paracrine and autocrine mechanisms. It is a potent cell growth inhibitor of fibroblasts, hepatocytes, keratinocytes, and endothelial and neuronal cells. For example, TGF-beta 1 can impair the immune response by deactivating macrophages and promoting the regulation of T cells, and it plays a role in T-lymphocyte and natural killer cell growth inhibition, via down-regulating IL-1 and IL-2 mediated proliferative signals. Furthermore, TGF-beta 1 downregulates hematopoietic progenitor cell growth and megakaryocytopoiesis, and is involved in extracellular matrix (ECM) degradation/remodeling via inducing ECM protein expression, such as integrins, collagen and fibronectin. It also contributes to bone formation, bone remodeling and participates in regulating chemotaxis and differentiation of osteoblasts.

The abnormal activation or inhibition of TGF-beta regulated processes is implicated in many diseases including cancer, fibrosis and inflammatory disorders such as rheumatoid arthritis and nephritis. TGF-beta 1 also exhibits cardioprotective properties and has been suggested to be an important regulator of contractile function of the heart. For a recent review please refer to Piek, E., Heldin, C.-H., Dijke, P.T. (1999) *The FASEB Journal* 13:2105-2124.