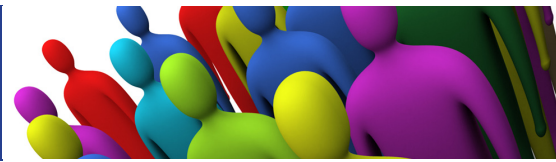


TGFβ^{HuXp} Recombinant Human Cytokine Authentic - Human Cell Expressed



INTRODUCTION

Cytokines are a group of proteins and polypeptides that organisms use as signaling molecules. Most cytokines are glycoproteins less than 30 kDa in size and bind to specific, high-affinity cell surface receptors. Due to their central role in the immune system, cytokines are involved in a variety of immunological, inflammatory and infectious diseases and widely used in research, diagnostics and therapeutics. Cytokines generally alter the gene expression pattern of the target cell which leads to changes in the rate of cell proliferation and/or in the state of cell differentiation. Currently, these proteins are predominantly produced in non-human cells (e.g. *E. coli*) and therefore lack authenticity due to the absence of physiologically relevant glycosylation. In addition, a number of important cytokines are not commercially available due to inadequate proteolytic processing, protein folding or other post-translational modifications that occur in the non-human cell expression systems.

HumanZyme has developed an efficient human-cell based technology, **HumaXpress™**, for scalable production of human cytokines. Currently, we have successfully produced expanding range of tag-free cytokines, including difficult-to-express protein members of the TGFβ superfamily. As demonstrated below, HumanZyme's authentic cytokines can be used as highly preferred reagents for cancer, inflammation, stem cell research, and antibody development.

TGFβ^{HuXp}

Transforming growth factors beta (TGFβ) are highly pleiotropic cytokines that act as cellular switches and regulate immune function, proliferation and epithelial-mesenchymal transition. These proteins are produced as precursors. A furin-like convertase processes the

proprotein to generate an N-terminal latency-associated peptide (LAP) and a C-terminal mature TGFβ. Disulfide-linked homodimers of LAP and TGFβ remain non-covalently associated after secretion, forming the small latent TGFβ complex. Covalent linkage of LAP to latent TGFβ binding proteins create a large latent complex that may interact with the extracellular matrix. Currently, commercially available TGFβ proteins are produced in CHO cells. Due to the complex post-proteolytic modification, the yield is low and bulk volume is not readily available. HumanZyme has stably produced TGFβ^{HuXp} from engineered human 293 cells. The proteins are disulfide-linked dimers of 25 kD that can be cost-effectively produced in large scale.

The bioactivity of TGFβ^{HuXp} was determined by the dose-dependent inhibition of IL5 induced proliferation of human TF-1 cells. The results indicate TGFβ^{HuXp} is 3-fold more active than the CHO expressed version. (See product catalog number HZ-1010, HZ-1011 and HZ-1012 at www.humanzyme.com.)

