

Human Cell Expressed Cytokines As Authentic Antigens



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*, SF9, CHO) 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.

HumaXpress™ for Authentic Antigens

Cytokines produced in *E. coli* are not glycosylated and may expose cryptic or normally hidden epitopes. Similarly, cytokines produced in SF9 or CHO cells have post-translational modifications which are not human-like. Because of these factors, antibodies may have different affinities depending on whether they were created from human cell expressed protein antigens or non-human cell expressed protein antigens. Indeed, Western blot analysis shows that monoclonal antibodies raised against a full length protein from non-human cells poorly recognize the recombinant human cytokines produced in human cells using **HumaXpress** technology. In contrast, these antibodies are highly reactive to the proteins that may correspond to micro-aggregates. These results indicate that recombinant cytokines from a human cell expression system are highly preferred antigens to raise antibodies as well as use as standards in ELISA assays. (visit www.humanzyme.com for a complete list of available cytokines)

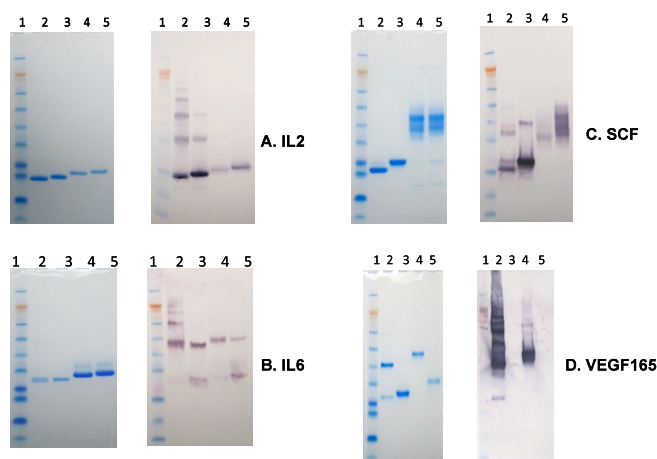


Fig. 1. Coomassie blue staining and Western blot analysis with the antibodies raised against the recombinant cytokines from non-human cells. The proteins are standards (1), cytokines from non human cells under non-reducing (2) or reducing conditions (3) and human cells under non-reducing (4) or reducing conditions (5).

HumanZyme has developed and continues to develop a growing range of tag-free cytokines, including difficult-to-express protein members of the TGFβ1 superfamily. HumanZyme Authentic Cytokines can be used as highly preferred reagents in a wide range of applications for cancer, inflammation, stem cell research, and antibody development.