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Cloning and Expression of Human Interleukin 15: A Promising Candidate for Cytokine Immunotherapy

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Abstract : Recombinant cytokines have been employed successfully as potential therapeutic agent. Some cytokine therapies are already used as a part of clinical practice, ranging from early exploratory trials to well established therapies that have already received approval. Interleukin 15 is a pleiotropic cytokine having multiple roles in peripheral innate and adaptive immune cell function. It regulates the activation, proliferation and maturation of NK cells, T-cells, monocytes/macrophages and granulocytes, and the interactions between them thus acting as a bridge between innate and adaptive immune responses. Unraveling the biology of IL-15 has revealed some interesting surprises that may point toward some of the first therapeutic applications for this cytokine. In this study, the human interleukin 15 gene was isolated, amplified and ligated to a TA vector which was then transfected to a bacterial host, E. coli Top10F'. The sequence of cloned gene was confirmed and it showed 100% homology with the reported sequence. The confirmed gene was then subcloned in pET Expression system to study the IPTG induced expression of IL-15 gene. Positive expression was obtained for number of clones that showed 15 kd band of IL-15 in SDS-PAGE analysis, indicating the successful strain development that can be studied further to assess the potential therapeutic intervention of this cytokine in relevance to human diseases.

Keywords : Interleukin 15, pET expression system, immune therapy, protein purification
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