

Comparison of expression systems for the production of human interferon- α 2b.

ABSTRACT

The production of human interferon alpha2b (IFN- α 2b) in two expression systems, tobacco (*Nicotiana tabaccum*) and *Escherichia coli*, was compared in various aspects such as safety, yield, quality of product and productivity. In the *E. coli* system, IFN- α 2b was expressed under a *pelB* signal sequence and a T7lac promoter in a pET 26b(+) vector. The same gene was also cloned in expression plant vector (pCAMBIA1304) between cauliflower mosaic virus promoter (CaMV35S) and poly A termination region (Nos) and expressed in transgenic tobacco plants. The expression of protein in both systems was confirmed by western immunoblotting and the quantity of the protein was determined by immunoassay. The amount of periplasmic expression in *E. coli* was 60 μ g/L of culture, while the amount of nuclear expression in the plant was 4.46 μ g/kg of fresh leaves. The result of this study demonstrated that IFN- α 2b was successfully expressed in periplasm of bacterial and plant systems. The limitations on the production of IFN- α 2b by both systems are addressed and discussed to form the basis for the selection of the appropriate expression platform.

Keyword: Expression platform; Interferon- α 2b; *Escherichia coli*; Transgenic tobacco.