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How recombinant glycoproteins produced?

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The need for recombinant therapeutic glycoproteins has arisen to cure many diseases like cancer. To maximise the levels of biosynthesis and secretion of recombinant protein, nucleotide sequences of promoter regions have been found. To introduce recombinant protein inside the host, Chinese hamster ovary (CHO) cells have been identified. The methods used to date to produce recombinant glycoproteins have many limitations. Therefore, a new way called metabolic cellular engineering is being utilised. This method genetically modifies the metabolic pathways in an organism to increase the production of a particular metabolite. CHO cells are considered most suitable as a mammalian expression host because those cells provide various advantages, such as easy genetic manipulation, large-scale culture production and glycoprotein production similar to human glycoproteins. The approach that has been used to produce recombinant glycoproteins is gene targeting/antisense DNA, which has 2 functions that control or delete genes whose products may affect expressed recombinant glycoproteins and enhance expression of endogenous proteins, which improve product quality and enhance cell productivity. The antisense control mechanism does not eliminate gene expression. The advantage of using this mechanism is that simple construction of vectors is required by having need of only cDNA or segments of the gene of interest. The introduction of an antisense expression vector into an existing expressing host after productivity is one of the approaches for constructing an antisense cell line. Recombinant therapeutic protein production provides a promising future in the treatment of cancer as tumour-specific products are produced using recombinant DNA technology, which is an effective technique.

Keywords: Recombinant glycoproteins, Chinese hamster ovary cells, Vector, Cancer, Cell line, Antisense DNA

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