Original Paper

Cloning and expression soluble recombinant parathyroid hormone in *E. coli*

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Abstract

Background and Objective: Parathyroid proteins involved in calcium homeostasis. With increasing age and other relevant factors, this hormone is not able to perform its role. Using recombinant parathyroid hormone prevent disease progression and effective in improvement of disease. This study was done to design and build the desired construct genes, cloning process and synthesis of soluble parathyroid hormone in *E. coli*.

Methods: In this laboratory study, design and optimization sequence of the gene parathyroid hormone (PTH) was carried out for expression of soluble proteins in bacteria. The construct contining PTH gene (puc 57) transformed into bacteria and cultivation was done in SOB medium then Plasmid extraction was performed. Fragment encoding the PTH was isolated by digestion of the cloning vector and ligate to expression vector (PET-32a). Subcloning process followed by induction with IPTG 1mM. The recombinant parathyroid hormon was expressed in bacteria, subsequently.

Results: After enzymatic digestion, the fragment encoding the protein of interest was properly localized. The process was confirmed by polymerase chain reaction (PCR). Following performing a transformation, induction process performed by IPTG with final concentration 1mM that caused the soluble parathyroid proteins to be expressed in bacteria and the process was confirmed by Western blot technique.

Conclusion: Protein expression in bacteria due to its rapid growth and the need to inexpensive medium is cost-effective. Soluble recombinant protein expression reduces downstream of recombinant protein production.

Keywords: Recombinant parathyroid hormone, Expression vector, Enzymatic digestion, PCR

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