عنوان مقاله:

Designing and Construction of a Cloning Vector Encoding mtb32C and mpt51 Fragments of Mycobacterium Tuberculosis as a DNA Vaccine Candidate

محل انتشار:

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خلاصه مقاله:

Background & objective: Tuberculosis (TB) remains a major cause of death around the world. Bacillus Calmette Guérin (BCG) is the only vaccine used in TB prevention that has a protective effect in children, but its effectiveness declines in adults. Design and development of new vaccines is the most effective way against TB. The aim of this study was to design and construct a DNA vaccine encoding mtb32C and mpt51 fusion genes of Mycobacterium tuberculosis. Methods: First, mpt51 fragment was amplified by PCR method. The pcDNA3.1+/mtb32C plasmid was transformed into E. coli JM109 and then extracted. The mpt51 gene and pcDNA3.1+/mtb32C plasmid were both digested with EcoRI and BamHI restriction enzymes followed by ligation of mpt51 fragment into the digested vector. The recombinant plasmid containing mtb32C and mpt51 was subsequently transformed into competent E. coli TOP10 strain. The clones were confirmed by colony-PCR, restriction enzyme digestion and sequencing. Results: Using agarose gel electrophoresis, a 926 bp fragment corresponded to mpt51 was observed. Digestion of the vector pcDNa3.1+/mtb32C and mpt51 gene was confirmed by electrophoresis. Then, the pcDNA3.1+/mtb32C plasmid was extracted. Sequencing results confirmed the accuracy of the desired plasmid. Conclusion: In this study, we constructed a cloning vector encoding Mtb32C/Mpt51 gene of Mycobacterium tuberculosis. The eukaryotic expression of this vector can be confirmed in future studies. It can be considered as a DNA vaccine in animal models later. .Successful cloning provides a basis for the development of new DNA vaccines against tuberculosis

کلمات کلیدی:

Mycobacterium tuberculosis, antigens, genetic vectors, Cloning