

## **Cloning of the recombinant cytochrome P450 Cyp141 protein of *Mycobacterium tuberculosis* as a diagnostic target and vaccine candidate**

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### **Abstract**

**Background:** Tuberculosis has been announced as a global emergency by World Health Organization and the second infectious agent of mortality worldwide. The general policy in the development of new vaccines is to develop some vaccines with higher efficiency not only for infants but also for adults compared with the Bacillus Calmette-Guerin vaccine. Recently, cytochrome P450 cyp141 has been introduced as a new target for detecting *Mycobacterium tuberculosis* from clinical samples.

**Objectives:** The aim of this study was to clone this gene in order to pave the way for more evaluation.

**Materials & Methods:** *M. tuberculosis* H37Rv DNA was extracted by a standard phenol-chloroform protocol. After designing the specific primers, P450 cyp141 gene was replicated by PCR. The purified PCR products were then sub-cloned into the pTZ57R/T plasmid vector. After extraction, enzyme digestion, and recombinant pTZ57R/T-cyp141 plasmid vector sequencing, the aforementioned products were cloned into a pET-26b plasmid vector. Then, the recombinant pET26b-cyp141 plasmid molecules were transformed to *Escherichia coli* strain BL21 (DE3) using the transformation method. Next, the recombinant pET26b-cyp141 plasmids were purified and evaluated by the enzyme digestion analysis.

**Results:** The cloning of *P450 cyp141* gene was confirmed by the enzyme digestion and sequencing of the recombinant pTZ57R/T-cyp141 and pET26b-cyp141 plasmid vectors.

**Conclusions:** The results of this study demonstrated that the *P450 cyp141* gene was successfully cloned into a pET26b plasmid vector as an expression vector. In this paper, for the first time in world, this gene was cloned for more purposes, including the expression and purification of the recombinant cytochrome P450 cyp141 protein.

### **Biography**

Mohammad Rabiee-Faradonbeh has completed his Msc at the age of 35 years from Shahrekord University of Medical Sciences. He is Lecture and Researcher at Islamic Azad University, Shahrekord Branch, Shahrekord, Iran. He has published 6 papers in reputed journals and has been serving as an editorial board member of reputed. He is Working with academic members of the project team in order to deliver project outcomes. Responsible for writing up research papers and presenting research findings to senior managers and also at academic meetings.

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