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Fusion expression of the recombinant protective antigen of *Bacillus anthracis* in *E.coli*

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Anthrax is a fatal infection caused by *Bacillus anthracis*. Protective antigen (PA) is one of the toxin components and essential component of the human anthrax vaccines. The current licensed human vaccines are produced in the United States (AVA) and United Kingdom. The current human vaccines have several limitations. They can cause side effects and require multiple boosters to maintain immunity. Therefore, a new generation of vaccines are required against anthrax.The objective of this study was to express recombinant PA for human vaccine studies and diagnosis of disease. The PA gene was cloned into the pMAL-c2X expression vector and transformed into *E.coli* DH5α. The expression of recombinant fusion protein (rMBP-PA) was identified by SDS-PAGE and Western blotting using anti-PA monoclonal antibody. The results showed that the PA gene was expressed as a fusion protein with maltose-binding protein (MBP). SDS-PAGE and Western blotting detected a protein band about 125 kDa, which was similar to rMBP-PA fusion protein. Anthrax is a health problem in developing countries and occurs among animals and humans.In this study we used the pMAL expression system for high expression of PA in *E. coli*. This expression system has several advantages (IPTG induction and one-step affinity purification process) and can be used for high level expression and large scale production of recombinant PA. We successfully expressed *B.anthracis* PA in the *E.coli*. Recombinant PA may be used for development of a new human recombinant anthrax vaccine that is safe, effective, and improved.

Biography

Vahid Bagheri received his BSc in cellular and molecular biology at the age of 22 from Tarbiat Moallem university of Tehran, MSc in microbiology at the age of 24 from Shahid Chamran university of Ahvaz. His research interests are infectious diseases, vaccine development, and pharmaceutical biotechnology. His first paper is published in asian pacific journal of tropical medicine (apjtm) in 2010.Currently he is applying for phd.