Production and Purification of Polyclonal Antibody Against Minor Subunit of Fimbriae Enterotoxigenic Escherichia coli (ETEC), and Ability Assay of Inhibition of Bacterial Binding to Target Receptor

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ABSTRACT

Background and objective: Enterotoxigenic Escherichia coli (ETEC) is the most commonly cause of bacterial diarrhea in the world wide. CFA/I fimbriae is one of the important virulence factor that have critical role in bacterial pathogenesis. Therefore, tip protein of these fimbriae (CFaE) could be considered as a vaccine candidate. The aim of this study is investigation of efficiency of produced antibody against CFaE for attachment inhibition of ETEC to receptors which located on the surface of human erythrocyte as a model.

Materials and methods: after codon optimization, cfaE gene synthesized and then cloned into pET28a as an expression vector. When gene construct induced by IPTG, desirable protein was expressed and purified with using by affinity chromatography. Recombinant protein as an antigen injected to mice and serum titers was measured with ELISA. Finally, ability of bacterial attachments to human erythrocyte group A was studied, in present and absent of anti-CFaE.

Results: bacterial which treated with serum of immune mice unlike those that treated with serum of control mice couldn`t caused hemagglutination of erythrocytes.

Conclusion: the results were indicated that rCFaE is a good immunogenic protein, so it could stimulate immune system of mice. Also, raised antibody with binding to fimberial proteins of bacteria inhibited attachment of ETEC to its target receptor.

Keywords: Enterotoxigenic Escherichia coli, minor subunit of Colonization Factor Antigen I (CFaE), antibody production, bacterial binding inhibition assay