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Original Article

Recombinant *Cryptosporidium parvum* p23 as a Candidate Vaccine for Cryptosporidiosis

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Abstract:

Background: Cryptosporidium parvum is a ubiquitous protozoan, which develops within the microvillous membrane of enterocytes in a wide variety of vertebrates, including man. Cryptosporidiosis is an important parasite causing severe diseases in the immunodeficient people especially AIDS patients. Cryptosporidiosis has been also reported as a com-mon serious primary cause of outbreaks of diarrhea in newborn calves. The aim of this study was to confirm that P23 was an immunogenic antigen in domestic isolates of C. parvum.

Methods: We isolated cryptosporidial oocysts from the naturally infected calves. The oocysts were then purified and characterized as C. parvum by nested PCR. To obtain the recombinant P23 protein, we isolated the mRNA from oocyst of C. parvum, and synthesized the cDNA. The cDNA was then amplified using specific primers for P23 gene.

Results: Sequencing of PCR product showed 100% homology to the known P23 sequences in GenBank. The double strand P23-cDNA was then cloned in pGEX-5X-2 expression vector and P23-recombinant protein was prepared. West-ern blot analysis of recombinant P23 showed that it could be recognized by the positive C. parvum serum. Furthermore, serum from immunized goat with the recombinant P23 protein also recognized a protein band with approximately 23 kDa in lysates prepared from the oocytes.

Conclusion: Since P23 is an immunodominant surface glycoprotein expressed in the early phase of infection and the immuno¬genic epitopes are found in its residual chain of amino acid sequence, the recombinant P23 could be recom-mended as a favorable candidate for vaccination against C. parvum infection.

Keywords:

Cryptosporidium parvum ، *Expression vector pGEX-5X-2* ، *recombinant protein P23* ، *PCR* ، *RT-PCR* ، *Western blot* ، *Dot Blot*

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