Molecular Cloning, Purification and Characterization of *Schistosoma mansoni* Fimbrin

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ABSTRACT

Screening of a Schistosoma mansoni cDNA expression library with sera from patients with chronic S. mansoni infections (SCI) resulted in isolation of a clone containing a 2.4Kb cDNA insert. An open reading frame (ORF) of 2Kb coded for a 651 deduced amino sequence that showed a striking homology with chicken fimbrin and human plastin. The insert was ligated into the pET-3a expression vector and was used to express a 70 kDa fusion protein S. mansoni fimbrin (Smfim). Smfim was purified from bacterial proteins using cation exchange chromatography. Antibodies against purified Smfim protein was raised in rabbits, and IgG fraction was purified on protein G-Sepharose column. The expressed protein was recognized by SCI, mouse sera from immunized mice (UV-irradiated cercaria), and from vaccinated mice (against worm homogenate). Smfim was localized in the tegumental region of adult S. mansoni worms as detected using immunofluorescence. The role of Smfim protein as a protective antigen was assessed by immunization of mice. The level of protection was about 40%. The sequence data reported herein have been submitted to GenBank and assigned the Accession No. Z34087.

Key words: *Schistosoma mansoni, Fimbrin, cDNA-library, Sequence, Vaccine.*

INTRODUCTION

Schistosomiasis is a chronic debilitating disease affecting human beings throughout 70 countries in several parts of the world. It is estimated that more than 200 million people are infected by various species of schistosomes. In recent years, studies have been focused on the identification and characterization of defined antigens that have potential significance in inducing a protective immunity. Rapid development of recombinant DNA technology has aided the studies on identification and purification of schistosome proteins (Bergquist, 1990; Cao *et al.*, 1992; Chen *et al.*, 1992; Knight *et al.*, 1986; Shoemaker *et al.*, 1992). Cloning and characterization of genes that encode schistosome proteins have been successfully achieved in various studies [Bergquist, 1995], and a significant progress in schistosomiasis vaccine development has been reported [Hagan and Gryseels, 1994].

With the aim to identify vaccine candidate against schistosomiasis *mansoni*, we have used infected human sera to screen cDNA expression library of adult *S. mansoni*. Recently, we have identified a recombinant protein from the trematode *S. mansoni* that showed striking homolgy with fimbrin. In this