Research abstract

Detection of circulating antigens in individuals infected with schistosomiasis using monoclonal antibody and fast dot-ELISA

A.M. Attallah and S.A. El-Masry

In this study, fast dot-enzyme linked immunosorbent assay (FD-ELISA) was used for detection of circulating antigens shedding in the urine of Schistosoma mansoni-infected patients, using BRLF4 monoclonal antibody (BRLF4-mAb) originated in mice infected with S. mansoni. In this study, 333 urine samples of S. mansoni-infected patients and 113 urine samples of non-infected individuals (diagnosed parasitologically) were subjected to FD-ELISA. The assay detected 309 out of 333 infected patients with a sensitivity of 93% and positive predictive value of 97%. The assay also detected 9 false-positive cases from 113 non-infected individuals, giving 92% specificity and 81% negative predictive value. The target antigen for the BRLF4-mAb was detected at a molecular mass of 74 kDa in the three developmental stages of S. mansoni extracts (eggs, cercariae, and adult worms) and in urine of S. mansoni-infected patients by SDS-PAGE (sodium dodecyl sulfate polyacrylamide gel electrophoresis) and Western blot techniques. This antigen was immunopurified using cyanogen bromide (CNBr)-activated sepharose beads coupled with the BRLF4-mAb, and showed a single peak when analysed by high performance liquid chromatography (HPLC) and high performance capillary electrophoresis (HPCE) techniques. The immunopurified antigen was further characterized as a protein in nature, with 65.3% hydrophilic amino acids and 34.7% hydrophobic amino acids. The immunochemical purification and characterization of the 74 kDa antigen enhanced the use of this antigen in immunization against S. mansoni infection.

Acknowledgements

We would like to thank H. Ismail, E. Yones, M. Abdel-Aziz, A. Saad and Professor Dr A. Soltan for assistance and support.

1 Biotechnology Research Laboratories, Gastroenterology Centre, Mansoura University, Mansoura, Egypt.

1996 ; 2