ROLE OF SOME PARASITE ANTIGENS IN PROTECTION AGAINST SCHISTOSOMA MANSONI INFECTION

Thesis

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Summary

Schistosomiasis *mansoni* is a chronic parasitic disease endemic in Egypt. Development of a vaccine against this global disease is now a priority especially for *WHO*.

In the current work, five antigens were prepared and used in vaccinating different mice groups. Vaccines were used alone or after mixing with Freund's adjuvants. The antigens are *Schistosoma mansoni* cercarial antigen, *S. mansoni* E/S adult antigen, *Fasciola gigantica* E/S antigen, *Cysticercus cellulosae* and *Toxocara canis* crude antigen.

After reaching the level of highest antibody response after vaccination, mice were infected with *S. mansoni* cercariae. Pooled sera were collected weekly from different vaccinated mice groups and control groups. Sera were used to study the changes of IgG antibody level before and after challenge infection by indirect ELISA technique. The mice were sacrificed at the end of the 7^{th} week post infection. They were dissected to extract *S. mansoni* worms and their organs were examined for histopathological changes.

The effectiveness of the antigens as a vaccine was estimated from, the degree of reduction in *S. mansoni* worm burden, the degree of pathological changes in the liver and spleen, and the changes in the IgG antibody in their sera before and after challenge infection in reference to the control groups.

This study showed that the presence of adjuvants with the antigen improves the response of the immune mechanisms in all mice groups of the study.

Using *Schistosoma mansoni* cercarial antigens in vaccination gave highly significant results as regards decreasing the worm burden in comparison to the control group. The antigen succeeded to protect the organs from the pathological changes, and maintained high antibody level after challenge infection. This was followed by *S. mansoni* E/S adult antigen. Vaccination by *F. gigantica* E/S antigens gave a medium level of protection. While, using crude antigens of *C. cellulosae* and *T. canis* in vaccination produced the weakest levels of protection against *S. mansoni* infection compared to the previous antigens.

The study tried to detect the level of cross-reaction between different antigens and hyperimmune sera produced in mice at the 5^{th} week post vaccination using two techniques, indirect ELISA and dot–ELISA. The obtained results revealed that dot ELISA technique appears more powerful in exclusion of cross-reacting antibodies.

In the other part of this study, different antigens were fractionated using SDS-PAGE. Fractionated *S. mansoni* E/S adult antigen was then treated with different hyperimmune sera produced after vaccination of mice with different antigens using EITB technique. The results revealed the presence of few numbers of cross-reacting protein fractions between *S. mansoni* E/S adult antigen *and F. gigantica* hyper-immune mice sera. While the results

of SDS-PAGE and EITB revealed the non-specific cross-reaction between *S. mansoni* and *C. cellulosae* & *T. canis.*