

*Ain-Shams University
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**COMPARATIVE STUDY OF
SENSITIVITY OF SOME
DIAGNOSTIC METHODS FOR
DETECTING EARLY *SCHISTOSOMA*
MANSONI INFECTION IN MICE**

*A Thesis
Submitted for the Award of Ph.D. in Zoology
(Molecular Biology)*

By

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ABSTRACT

Schistosomiasis is considered as the second most important human parasitic disease after malaria causing morbidity and mortality. This morbidity and mortality is associated with the chronic stage of infection. Thus a diagnostic tool capable of detecting *Schistosoma* infection in the acute phase would be of great value. In the present work two Cercarial and two worm antigen preparations were used to detect IgG in plasma of *S. mansoni* infected mice by Enzyme linked immunosorbent assay (ELISA). In parallel, specific primers for the parasite genome were used to detect infection in plasma & urine from infected mice. Results showed that all the above mentioned diagnostic approaches enabled detecting infection as early as 3 days post mice exposure to parasite. Detection of parasitic DNA in urine samples was the most sensitive and specific test for detecting infection than all the above mentioned tests. Furthermore the study extended to detect the infection in the snail's tissue at prepatancy and patancy stages using polymerase chain reaction (PCR). Results showed 100% sensitivity and specificity of such technique.

The present work was conducted to detect infection in the main host using antigens extracted from an intermediate snail host by ELISA. The result illustrated higher IgG reactivity with both snails' tissue homogenate and hemolymph of infected snails reflecting presence of common antigens between the parasite and its snail intermediate host.



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LIST OF ABBREVIATION

List of Abbreviations

AWA	Adult worm antigen
<i>B. aexandrina</i>	<i>Biomphalaria aexandrina</i>
<i>B. glabrata</i>	<i>Biomphalaria glabrata</i>
<i>B. truncatus</i>	<i>Bulinus truncates</i>
CAA	Circulating anodic antigens
CAP	Cercarial antigen preparation
CCA	Circulating cathodic antigens
CE	Cercarial elastase
CMS	Control mice sera
CS	Cercarial secretion antigen
CTAB	Hexadecyltrimethyl-ammonium bromide
ddH ₂ O	Double distilled water
EDTA	Ethylene Diamine Tetra Acetic Acid
ELISA	Enzyme linked immunosorbent assay
ES	Excretory-secretory
FCS	Fetal calf serum
gDNA	Genomic DNA
IFN- γ	Interferon –Gamma
IgG	Immunoglobulin type G
IMP	Infected mice plasma
IMS	Infected mice sera
IRC	Irradiated cercariae

LIST OF ABBREVIATION

MP	Mean percentage
PBMCs	Peripheral blood mononuclear cells
PBS	Phosphate buffered saline
PCR	Polymerase chain reaction
PZQ	Praziquentel
RA	Radiation Attenuated
<i>S. heamatobium</i>	<i>Schistosoma heamatobium</i>
<i>S. intercalatum</i>	<i>Schistosoma intercalatum</i>
<i>S. japonicum</i>	<i>Schistosoma japoanicum</i>
<i>S. mansoni</i>	<i>Schistosoma mansoni</i>
<i>S. mekonji</i>	<i>Schistosoma mekonji</i>
SBgA	soluble crude <i>Biomphalaria glabrat</i> antigen
SDS	Sodium Dodecyle Sulphate
SEA	Soluble egg antigen
SWAP	Soluble worm antigen preparation
TEMED	N, N, N', N'-tetramethylethylendiamine
UIMP	Un infected mice plasma
UIMS	Un infected mice sera
WoV	Worm vomit