DETECTION BY POLYMERASE CHAIN REACTION OF SCHISTOSOMA MANSONI DNA IN HUMAN SERUM

Thesis

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Abstract

The present work constitutes a prospective study on a total number of 92 individuals; 69 patients infected with *S. monsoni*, 13 with other parasitic infections and 10 normal individuals. The studied individuals were categorized into 4 main groups**:** Group I, active intestinal schistosomiasis, group II cases with past history of intestinal schistosomiasis, group III (Parasitic control group) and group IV (healthy control group). Results of the current study indicate that PCR using patient's serum can detect circulating DNA of *S.mansoni* in 96.4% of active intestinal schistosomiasis.

Key words: Schistosomiasis *mansoni*- PCR- Diagnosis.

I Dedicate this Work to

My Dearly Beloved parents, My Sister, and My Brother.

To My Dear, Husband

To My Sweet Heart

Mohamed and Ahmed &

To my blooming flower Nada.

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Arabic Summary.

List of Abbreviations

- **A** : Adenine base.
- **BACs** : Bacterial artificial chromosomes.
- **Bp** : Base pair
- **C** : Cytosine base.
- **CAA** : Circulating anodic antigen.
- **C banding** :Centric banding
- **CCA** : Circulating cathodic antigen.
- **CE** : Cercarial elastase .
- **CFT** : Complement fixation test.
- **CGD** : Chronic granulomatous disease.
- **CIEP** :Counterimmunoelectrophoresis .
- **COPT** : Circumoval precipitation test
- **ESTs** : Expression sequence tags.
- **Fg** : Fecal gram.
- **FISH** : Fluorescence in situ hybridization.
- **G** : Guanine base.
- **GAA** : Gut associated antigen.
- **GC** : Guanine-Cytosine.
- **HSP70** : Heat shock protein 70.
- **IFAT** : Indirect immunofluorescent antibody test.
- **IgM** : Immunoglobulin (M)
- **IHAT** : Indirect haemaglutination test.

- **Kb** : Kilo-base.
- **Kbp** : Kilo base pair.
- **KD** : Kilo Dalton.
- **K-K** : Kato-Katz technique.
- **LS-PCR** : Low stringency PCR.
- **Mb** : Million base.
- **MBA** : Membrane bound antigen.
- **MHC** : Major histocompatibility complex.
- **PBMC** : Peripheral blood mononuclear cells.
- **PCR** : Polymerase Chain Reaction
- **PZQ** : Praziquantel.
- **RAP-PCR** : RNA arbitrarily primed PCR.
- **RAPD.PCR** : Randomly amplified polymorphic-PCR.
- **RFLP** : Restriction fragment length polymorphism
- **RP 26** : Recombinant protein 26.
- **RT.PCR** : Reverse transcriptase PCR
- **SCA** : Serum circulating antigen.
- **SEA** : Soluble egg antigen.
- **Sm** : *Schistosoma mansoni* .
- **SmCTSOD** :*Schistosoma manson*i cytosolic superoxide dismutase.
- **SmGPCR** *: Schistosoma mansoni* G protein coupled receptor.
- **T** : Thymine base.
- **Um** : Micromole.

- **UV** : Ultraviolet.
- **YACs** : Yeast artificial chromosomes.

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INTRODUCTION

Schistosomiasis is one of the most severe tropical diseases in the world**.** The World Health Organization estimates that between 200 and 300 million people worldwide are infected with schistosomiasis. Schistosomal infection is endemic in the Caribbean islands, the Middle East, eastern Asia, South America, and Africa (**Pontes *et al*., 2002)**.

Schistosoma mansoni, the African blood fluke, causes schistosomiasis, a serious parasitic disease second only to malaria in terms of morbidity. This parasitic worm is widespread in Africa and Latin America, and infects humans by directly penetrating skin from contaminated water, making public health based control of the disease difficult **(Van Der Werf *et al*., 2003)**.

Accurate diagnostic tests are mandatory for diagnosis at the individual level. Also they are important for effective disease surveillance and control at the population level and particularly to monitor large scale chemotherapy programmes **(Doenhoff *et al*., 2004).**

The current method for the diagnosis of schistosomiasis in areas of endemicity is the microscopic detection of eggs in stool and urine samples. This assay does not give reliable results, and several measurements on different days are necessary for the precise diagnosis of schistosomiasis **(Berhe *et al*., 2004).**