

Comparative Study on Some Immunodiagnostic Techniques Currently Used for the Diagnosis of Lymphatic Filariasis in Egypt

Thesis

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الطبيب / من مهنين حيا
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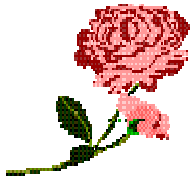
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In the name of Allah
the Most Gracious the Most Merciful



To my dearly beloved father, without his knowledge, wisdom, and guidance, I would not have the goals I have to strive and be the best to reach my dreams! I wish I could tell him I love him and appreciate all that he had done for me! But I know in my heart he did know.

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Abstract

The present work constitutes a comparative study on a total of 82 Egyptian subjects. The study groups comprised 38 lymphatic filariasis cases; including 18 microfilaraemic asymptomatic subjects and 20 symptomatic seropositive amicrofilaraemic subjects. In addition to 32 cases infected with other parasites (schistosomiasis, fascioliasis and hydatidiosis patients) and 12 apparently healthy subjects seronegative for those parasites as well as for filariasis, to be used as control group.

All serum samples were tested for the presence of anti-filarial antibodies, utilizing reagents currently used for the diagnosis of lymphatic filariasis in Egypt. The commercially available *Dirofilaria immitis* adult crude antigen was used to detect the serum IgG in indirect ELISA, IgG4 ELISA, Dot-ELISA and dipstick ELISA techniques.

Among 18 microfilaraemic cases, these tests were positive in 11 (61.1%), 18 (100%), 14 (77.8 %) and 14 (77.8 %), respectively. While the corresponding figures among the symptomatic amicrofilaraemic cases were 19 (95%), 0 (0%), 17 (85 %) and 16 (80%) with specificity of 75%, 95.5%, 88.6% and 88.6%, respectively.

In this study, comparable correlations were observed between the ELISA results with the parasitological and clinical status of the lymphatic filariasis group. IgG4 ELISA was found more sensitive and specific in detection of microfilaraemic asymptomatic cases than other indirect IgG ELISA techniques.

On the other hand, Dot ELISA was found to be relatively more sensitive than other techniques among all groups of patients examined.

In the present study, *Dirofilaria immitis* adult worm crude antigen was utilized in the four ELISA tests with relatively high degree of sensitivity and specificity in addition to its commercial availability, rendering it as a reliable reagent of a high immunodiagnostic potential.

Key words: Indirect ELISA, *Dirofilaria immitis* antigen, Dot ELISA, Dipstick ELSIA and bancroftian filariasis.

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List of Abbreviation

| | |
|----------|------------------------------------|
| ADLA | Acute Dermato-Lymphangitis |
| ANOVA | Analysis of Variance |
| Bm14 | <i>Brugia malayi</i> 14 |
| BC | Before Christ |
| CBT | Checkerboard Titration |
| CD | Cluster of Differentiation |
| CFA | Circulating Filarial Antigen |
| CICs | Circulating Immune Complexes |
| CTLA | Cytotoxic T-Lymphocyte Antigen |
| DAB | Diaminobenzidine |
| DEAE | Diethylaminoethyl |
| DEC | Diethylcarbamazine |
| DIA | Dipstick Immunoassay |
| DNA | Deoxyribonucleic Acid |
| Dot-IGSS | Dot-Immunogold Silver Staining |
| D.W | Distilled Water |
| ELISA | Enzyme-Linked Immunosorbent Assay |
| ES | Excretory Secretory |
| Fc | Fraction Crystalline |
| FPLC | Fast Protein Liquid Chromatography |
| GD | Gel Diffusion |
| G | Gram |

| | |
|-------|--|
| GPELF | Global Program for Elimination of Lymphatic Filariasis |
| HIV | Human Immunodeficiency Virus |
| HRP | Horse Raddish Peroxidase |
| ICT | Immunochromatographic test |
| IFAT | Indirect Fluorescent Antibody test |
| Ig | Immunoglobulin |
| IHAT | Indirect Haemagglutination test |
| IL | Interleukin |
| INF | Interferon |
| kD | Kilo Dalton |
| LF | Lymphatic Filariasis |
| M | Mole |
| Mab | Monoclonal Antibody |
| MDA | Mass Drug Administration |
| mf | Microfilaria |
| mf S | Microfilarial Soluble |
| MIF | Migration Inhibitory Factor |
| ml | Milliliter |
| MX | Molecular Xeno-Monitoring |
| NC | Nitrocellulose |
| NFB | Nucleopore-Filtered Blood |
| Ng | Nanogram |
| OD | Optical Density |
| Og | <i>Onchocerca gibsoni</i> |