

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكرو فيلم

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Evaluation of Cystatin-Capture and Periodate-Treated ELISA in Serodiagnosis of Toxoplasmosis and Hydatidosis

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List of Abbreviations

AE	Alveolar Echinococcosis
Ag	Antigen
AIDS	Acquired immunodeficiency syndrome
AUC	Area under curve
CCIEP	Counter current immunoelectrophoresis
CD	Clusters of differentiation
c-DNA	Cloned-DNA
CE	Cystic echinococcosis
CHD	Cystic hydatid disease
CIC	Circulating immune complexes
CT	Computed tomography
DNA	Deoxyribonucleic acid
EgAP	<i>Echinococcus</i> <i>granulosus</i> alkaline phosphatase
EITB	Enzyme linked immunotransfere blot
ELISA	Enzyme-linked Immunosorbent Assay
ESA	Excretory secretory antigen
FNAB	Fine needle aspiration biopsy
GRA	Granule antigen
HA-DIA	Hydatid antigen-dot immunobinding assay
HCF	Hydatid cyst fluid
HIV	Human immunodeficiency virus
IB	Immunoblotting
IEP	Immunolectrophoresis
IFAT	Indirect florescent antibody test
IFN	Interferon
IgA	Immunoglobulin A
IgE	Immunoglobulin E
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IHAT	Indirect haemagglutination test
IL	Interleukin

ILA	Indirect latex agglutination
Kd	Kilo Dalton
LN	Lymph node
MAB	Monoclonal antibody
MAT	Modified agglutination test
MIP	Microneme protein
MR	Magnetic resonance
MW	Molecular weight
NPV	Negative predictive value
OD	Optical density
PAIR	Puncture aspiration injection and reaspiration
PAS	Periodic acid Schiff
PBMC	Peripheral blood mononuclear cells
PBS	Phosphate buffer saline
PCR	Polymerase chain reaction
PMN	Polymorph nuclear cells
PPV	Positive predictive value
PSSAs	Protoscolex soluble somatic antigens
r-ELISA	Rhoptries-ELISA
ROC	Receiver operator characteristics
SD	standard of deviation
SDS-Page	Sodium dodecyl sulfate polyacrylamide gel electrophoresis
SFT	Sabin Feldman Test
SAG	Surface Antigen
SMP	Sodium metaperiodate
T-h cell	T-helper cells
TSML	<i>Trichinella spiralis</i> muscle larva
US	Ultrasound
UHD	Unilocular hydatid disease
WB	Western blot
WHO	World health organization

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Abstract:

Three different ELISA techniques; cystatin-capture ELISA, sodium metaperiodate treated antigen ELISA (SMP-ELISA) and conventional ELISA were used for the detection of specific immunoglobulin G (IgG) in patients with toxoplasmosis and hydatid disease. Results showed that conventional ELISA gave a sensitivity of 93.3%, specificity of 90%, PPV of 93.3% and NPV of 90%. While cystatin-capture ELISA gave a sensitivity of 96.6%, a specificity of 95%, PPV of 96.6% and NPV of 95% and SMP-treated ELISA gave a sensitivity of 86.6%, a specificity of 95%, PPV of 96.3% and NPV of 82.6% in diagnosis of toxoplasmosis. While in diagnosis of hydatidosis, conventional ELISA showed a sensitivity of 90% and a specificity of 75%, PPV of 84.4% and NPV of 83.3%. While cystatin-capture ELISA gave a sensitivity of 96.7%, a specificity of 100% PPV of 100% and NPV of 95.2% and SMP-treated ELISA gave a sensitivity of 90%, a specificity of 95%, PPV of 96.4% and NPV of 86.4%. We concluded that both cystatin-capture ELISA and SMP-treated ELISA are sensitive and specific tests for the serodiagnosis of human toxoplasmosis and hydatidosis in comparison to conventional ELISA test.

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بسم الله الرحمن الرحيم

و قل إعملوا فسيرى الله عملكم
و رسوله و المؤمنون

صدق الله العظيم

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Introduction

Cysteine proteinases (proteases) are proteolytic enzymes found in the excretory-secretory products of different parasitic helminthes (**Tort et al., 1999**) and protozoa (**Rosenthal, 1999**). Purification of cysteine proteinases is a complex and time consuming process that can be substituted by the use of cystatin a protein inhibitor of cysteine proteinases which forms tight binding with these proteinases making them accessible to serum antibodies without the need for purified enzymes (**Bode et al., 1988**).

The high specificity of cystatin to proteinases made it a suitable capture-reagent for detecting anti-cysteine proteinases. Cystatin has been used successfully as a capture agent in ELISA to detect cysteine proteinase antibodies without the need for purified proteinases for the diagnosis of Chagas' disease (**Scharfstein et al., 1995**), schistosomiasis *mansoni* (**Chappell et al., 1990**), human fascioliasis (**Tawfeek and Hussein, 2000**), trichomoniasis (**Tawfeek et al., 2003**) and experimental trichinellosis (**Mahmoud and Mostafa, 2003**).

Immunodiagnostic methods such as latex agglutination, indirect haemagglutination, complement fixation, indirect fluorescent antibody, precipitation tests, western blotting and ELISA tests, have been used in many laboratories and could confirm the diagnosis of hydatidosis (**Biava et al., 2001**) and toxoplasmosis (**Black and Boothroyd, 2000**). The sensitivity of these assays varies from 60% in immunoelectrophoresis
