

IMMUNOLOGICAL AND HISTOPATHOLOGICAL PATTERN OF TRICHINELLA-SPIRALIS INFECTION IN THE EXPERIMENTAL ANIMALS

Thesis

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INTRODUCTION

The genus *Trichinella* is a parasitic nematode in skeletal muscle cells of a wide variety of vertebrate hosts (Webster et al., 2006 and Zimmer et al., 2008). *Trichinella* is quite different from many other helminthes because all stages of development (adult & larvae) occur within a single host (Pozio et al., 2000). Studies on isolates of *Trichinella spiralis* from arctic, temperate, and tropical areas have confirmed that there are major differences related to their genetic structure and overall biology (Gamble et al., 2007). *Trichinella* forms a complex of at least eight species, all of which appear to be the same morphologically but based on DNA studies and comparative features are actually quite different (Cortes et al., 2002). Infection occurs by eating contaminated muscles which contain infective larvae (meat - borne infection) which present in both industrialized and non industrialized countries (Pozio et al., 1998, Kociecka et al., 2004, and Ozdemir et al., 2002).

Trichinosis belong to a group of diseases characterized by remarkable variety of symptoms and signs .The severity of the infection depends both on the parasite and the host. The typical findings are fever, facial edema particularly around the eye, side of nose, temples and hands. Pain, swelling and weakness of muscles, Other less common symptoms include headache, flushing of face, conjunctivitis, and anorexia, lymph nodes frequently become enlarged and tender,

Damage of the muscles in this stage may cause difficulty in eye movements, breathing, chewing, swallowing and speech or in the use of the extremities (Plorde et al., 1994, and Pozio et al., 2001) .

Diagnosis of Trichinosis is depending on the severity of the infection which can mimic many other conditions (van Knapen et al., 1981). Trichinosis should always be included in the differential diagnosis of any patient with periorbital oedema, fever, myositis, and eosinophilia, regardless of whether a complete history of raw or poorly cooked pork consumption is available (Murrell et al., 1986). Respecting the fact that it is very rare to recover adult worms or larvae from stool or other body fluids even if the patient has diarrhea, it was very important to find an accurate methods of laboratory diagnosis to overcome the unreliability of the direct laboratory methods and the hazards of muscle biopsy examination, therefore the importance of the serological tests for detection of *Trichinella- spiralis* antibodies in the sera of the suspected cases emerges (van Knapen et al., 1981). Serological tests include: complement fixation test, haemagglutination test, ring precipitation test, flocculation test, indirect fluorescence antibody test, counter current immunoelectrophoresis and ELISA (Gamble et al., 1983 , Murrell et al., 1986 & van Knapen et al., 1981) . Among many researches which have been done for detection of the specific antigen for *Trichinella-spiralis*.Both crude larval antigen and excretory -secretory antigens were found to be highly specific for detection of *Trichinella-spiralis* antibodies in serum (Taylor et al.,

1980). Each test gives different degrees of sensitivity and specificity. Sodium Dodecyl Sulphate polyacrylamide gel electrophoresis was able to fractionate *Trichinella-spiralis* antigen into more purified fragments. Using Enzyme-linked immunotransfer blot (EITB), an accurate mean of detection specific anti *Trichinella -spiralis* antibodies is introduced (Taylor et al., 1980 and Faubert et al., 1985).

Aim Of The Work

This study aims to investigate the potential use of detection of the Anti *Trichinella-spiralis* circulating antigens in comparison to antibodies as a diagnostic tool in experimental Trichinosis in the laboratory bred animals and to correlate the findings with histopathological examination of the infected animals.

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List of abbreviations

BSA	Bovine serum albumin
BF	bentonite flocculation
DNA	Deoxynuclic – acid
EITB	Enzyme-linked immunotransfer blot
ELISA	Enzyme- linked immunosorbent assay
ESA	Excretory /secretory Antigen
HRP	Horseradish peroxidase
IgA	Immunoglobulin-A
IgE	Immunoglobulin-E
IgG	Immunoglobulin-G
IgM	Immunoglobulin- M
KD	Kilo Dalton
M	Mol
mAbs	monoclonal antibodies
N	Normal
OD	Optic density
OPD	O-phenylene dopamine dichloride

PBS	Phosphate Buffer saline
PBS/E	Phosphate buffered –saline for ELISA
PBS/T	Phosphate buffered –saline for Tween
PCR	Polymerase chain reaction
RIA	Radioactive immunoassay
SDS-PAGE	sodium dodecyl sulphate polyacrylamide gel electrophoresis
<i>T. britovi</i>	<i>Trichinella- britovi</i>
<i>T.murelli</i>	<i>Trichinella- murelli</i>
<i>T.nativa</i>	<i>Trichinella- nativa</i>
<i>T. nelsoni</i>	<i>Trichinella- nelsoni</i>
<i>T.papuae</i>	<i>Trichinella- papuae</i>
<i>T.pseudospiralis</i>	<i>Trichinella-pseudospiralis</i>
<i>T.spiralis</i>	<i>Trichinella-spiralis</i>
<i>T. zimbabwensis</i>	<i>Trichinella- zimbabwensis</i>
TSL	<i>Trichinella-spiralis</i> larva

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