

Comparison Between Conventional Methods and Copro-Antigen Detection for Diagnosis of *Giardia lamblia* in Human Fecal Samples

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Abstract

The present work constitutes a study on a total of 85 cases presenting with symptoms that might be suggestive of intestinal giardiasis as abdominal pain, abdominal distension and diarrhea. All fecal samples were examined using the direct wet smear and the formol-ether concentration techniques. Among 85 cases 42 cases were positive for *Giardia*, 30 cases were negative for *Giardia* and other parasites and 13 cases were negative for *Giardia* put positive for other parasites. Rapid immunochromatographic test (Ridaquick kit) and ELISA (Ridascreen kit) were used to detect *Giardia* antigen in all fecal samples and the results were compared to the results of microscopic examination, sensitivity of rapid immunochromatographic test was 95.2% while sensitivity of ELISA was found to be 97.6%.

Keywords: *Giardia*- ELISA – Coproantigen.

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List of abbreviations

Abd. Distension:	Abdominal distension.
Abd. Pain:	Abdominal pain.
AIDS:	Acquired immunodeficiency syndrome.
ANOVA:	Analysis of variants.
CM:	Cell membrane.
CRP:	Cysteine-rich protein.
DNA:	Deoxy ribonucleic acid.
dsRNA:	double-stranded ribonucleic acid.
EDTA:	Ethylenediamine tetra acetic acid.
EGF:	Epidermal growth factor.
<i>E.histolytica</i> :	<i>Entamoeba histolytica</i> .
EIA:	Enzyme immunoassay.
ELISA:	Enzyme-linked immunosorbent assay.
F:	Female.
GIT:	Gastrointestinal.
<i>G.duodenalis</i> :	<i>Giardia duodenalis</i> .
GLV:	<i>Giardia lamblia</i> virus.
<i>G.lamblia</i> :	<i>Giardia lamblia</i> .
<i>G.muris</i> :	<i>Giardia muris</i> .
gm:	Gram.
HSP:	Heat shock protein.
<i>H.nana</i> :	<i>Hymenolepis nana</i> .
IFA:	Indirect immunofluorescence assay.
IFN- γ :	Interferon gamma.
IgA:	Immunoglobulin A.
IgE:	Immunoglobulin E.
IgG:	Immunoglobulin G.

IgM:	Immunoglobulin M.
IHA:	Indirect haemagglutination assay.
IL:	Interleukin.
IMS-IFA:	Immunomagnetic separation coupled with immunofluorescence.
KDa:	Kilodalton.
M:	Male.
Max:	Maximum.
mg:	Milligram.
Min:	Minimum.
ml:	Milliliter.
<i>n</i> :	Total number.
NaCl:	Sodium chloride.
nm:	Nanometer.
NO:	Nitric oxide.
No.:	Number.
NPV:	Negative predictive value.
O&P:	Ova and parasite.
PCR:	Polymerase chain reaction.
PPV:	Positive predictive value.
RPM:	Round per minute.
S.D:	Standard deviation.
TMB:	Tetramethylbenzidine.
TNF:	Tumor necrosis factor.
UV:	Ultra-violet.
VSPs:	Variant surface proteins.

μl:	Micro liter.
μm:	Micro meter.
+ve:	Positive.
-ve:	Negative.

INTRODUCTION

Introduction

Humans are hosts to nearly over 70 species of protozoa, some derived from our primate ancestors and some are acquired from the domesticated animals or animals that came in contact with us during our relatively short history on Earth. Thereafter, the history of human parasitology proceeded along two lines, the discovery of a parasite and its subsequent association with disease and / or the recognition of a disease and the subsequent discovery that it was caused by a parasite (**Cox, 2002**).

Giardia lamblia is a micro-aerophilic protist, which has long been considered as a model of ancient premitochondriate eukaryotes that causes diarrhea. It is a single cell protist with a motile trophozoite stage and immotile cyst stage (**Samuelson, 2002**).

Giardia lamblia is a parasite of public health importance as it can be transmitted through several routes including water and fresh food products (**Nichols, 2000**). In developed countries, *Giardia* is currently referred as a remerging infectious agent because of its increasing role in outbreaks of diarrhea in day care centers and water and foodborne outbreaks affecting the general population. However, in developing countries located in Asia, Africa and Latin America, approximately 200 million people per year experience symptomatic giardiasis (**Thompson et al., 2000**).

Most infected individuals show few or no signs of infection, they act as unaffected carrier, but in some, particularly children, there may be malabsorption, diarrhea, and abdominal pain (**Cox, 2002**).

Conventional microscopical diagnosis of giardiasis is time-consuming, and relies crucially on the microscopist's skills and experience. Furthermore, microscopical examination must be performed on three stool samples to increase sensitivity which leads to problems concerning patient compliance and delays in the final diagnosis. In an attempt to establish sensitive and cost-effective methods to diagnose intestinal infection with *Giardia*, a number of copro-antigen detection tests have been developed (**Johnston et al., 2003**).

Aim of the work

Aim of Work

This study aims to compare between conventional methods using lugol`s iodine stain, concentration technique and two immunological methods using ELISA, quick immunochromatographic test for detection of *Giardia lamblia* antigen in stool samples, regarding ease of use, total hands on time, incubation and processing time, cost, sensitivity and specificity.