

**STUDY ON SEROPREVALENCE OF IgM ANTIBODIES  
AGAINST THE AGENTS OF TORCH INFECTIONS  
AMONG THE PATIENTS VISITING NATIONAL PUBLIC  
HEALTH LABORATORY**

**A  
DISSERTATION  
SUBMITTED TO THE CENTRAL DEPARTMENT OF MICROBIOLOGY  
TRIBHUVAN UNIVERSITY**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD  
OF THE DEGREE OF MASTER OF SCIENCE IN MICROBIOLOGY  
(MEDICAL)**

**BY  
SUJATA LAMICHHANE**

**CENTRAL DEPARTMENT OF MICROBIOLOGY  
TRIBHUVAN UNIVERSITY  
KIRTIPUR, KATHMANDU, NEPAL  
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**STUDY ON SEROPREVALENCE OF IgM ANTIBODIES AGAINST THE AGENTS OF TORCH  
INFECTIONS AMONG THE PATIENTS VISITING NATIONAL PUBLIC HEALTH LABORATORY**

**-SUJATA LAMICHHANE**

**2007**

## RECOMMENDATION

This is to certify that **Miss SUJATA LAMICHHANE** has completed this dissertation work entitled “**Study on seroprevalence of IgM antibodies against the agents of TORCH infections among the patients visiting National Public Health Laboratory**” as a partial fulfillment of Master of Science Degree in Microbiology under our supervision. To our knowledge, this work has not been submitted for any other degree.

---

**Ms. Shaila Basnyat**

Assistant Professor

Central Department of Microbiology

Tribhuvan University

Kirtipur, Kathmandu

---

**Prof. Dr. Sarala Malla, M.D.**

Director General

Department of Health Services

Ministry of Health and Population and

Coordinator

M. D. Pathology Subject Committee

NAMS, Bir Hospital

Date: .....

## **CERTIFICATE OF APPROVAL**

On the recommendation of **Ms. Shaila Basnyat and Prof. Dr. Sarala Malla**, this dissertation work of **Miss Sujata Lamichhane**, entitled “**Study on seroprevalence of IgM antibodies against the agents of TORCH infections among the patients visiting National Public Health Laboratory**” has been approved for the examination and is submitted to the Tribhuvan University in the Partial fulfillment of the requirements for **Master of Science Degree in Microbiology (Medical)**.

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**Dr. Anjana Singh**  
Head of Department  
Central Department of Microbiology  
Tribhuvan University  
Kirtipur, Kathmandu  
Nepal

Date: .....

## BOARD OF EXAMINERS

**Recommended by:**

---

**Ms. Shaila Basnyat**  
Supervisor

---

**Prof. Dr. Sarala Malla**  
Supervisor

**Approved by:**

---

**Dr. Anjana Singh**  
Head of Department

**Examined by:**

---

**Bishnu Tiwari**  
Microbiologist  
Nepal Red Cross Society  
Central Blood Transfusion Service  
External Examiner

---

**Binod Lekhak**  
Assistant Professor  
Central Department of Microbiology  
Tribhuvan University  
Internal Examiner

Date: .....

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Date: .....

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Sujata Lamichhane

## ABSTRACT

A study was conducted among patients suspected of TORCH (*Toxoplasma gondii*, Rubella virus, Cytomegalovirus and Herpes simplex virus) infections visiting National Public Health Laboratory (NPHL), Kathmandu, Nepal. The study was conducted at the Immunology section of NPHL for five months from May-September 2006. The main aim of this study was to determine the seroprevalence of TORCH infections among the suspected patients of different age groups and gender and to correlate this data with different disease conditions.

Serum samples collected from 276 patients were tested for TORCH infections by IgM Enzyme Linked Immunosorbent Assay (ELISA). Only 23.19% (64/276) of the samples showed presence of IgM antibodies against TORCH agents. Higher seroprevalence of TORCH (IgM) was found in females (26.32%) than in males (16.28%). However, the association of TORCH infection with the gender was not found to be statistically significant ( $P>0.05$ ).

Among 219 suspected cases of *Toxoplasma*, 4.88% (2/41) of male and 15.73% (28/178) of female patients were positive to anti-*Toxoplasma* IgM. Similarly, 9.37% (3/32) of the male and 3.73% (6/161) of the female patients among 193 suspected cases were positive to anti-Rubella IgM, 14.70% (5/34) of the male and 11.04% (18/163) of the female patients among 197 suspected cases were positive to anti-CMV IgM and 9.46% (7/74) of the male and 11.90% (20/168) of the female patients among 242 suspected cases were positive to anti-HSV IgM. An overall prevalence of 13.70%, 4.66%, 11.67% and 11.16% to *T. gondii*, Rubella virus, CMV and HSV respectively was found.

An overall prevalence of IgM antibodies were found to be 15.43% (25/162), 4% (6/150), 9.33% (14/150) and 11.49% (17/148) to *Toxoplasma*, Rubella, CMV and HSV respectively among 164 female patients with bad obstetric history (BOH).

Associations of *Toxoplasma* infection with meat eating habit and rearing cats were found to be statistically significant ( $p<0.05$ ).

**Key words:** TORCH infection, serum, IgM, ELISA, Female with BOH

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## LIST OF ABBREVIATIONS

<b>µl</b>	: Microlitre
<b>AIDS</b>	: Acquired Immune Deficiency Syndrome
<b>BOH</b>	: Bad Obstetric History
<b>CAR</b>	: Congenitally Acquired Rubella
<b>CDC</b>	: Centre for Disease Control and Prevention
<b>CMI</b>	: Cell Mediated Immunity
<b>CMV</b>	: Cytomegalovirus
<b>CNS</b>	: Central Nervous System
<b>CRS</b>	: Congenital Rubella Syndrome
<b>CSF</b>	: Cerebro Spinal Fluid
<b>CT</b>	: Computed Tomography
<b>DNA</b>	: Deoxyribo Nucleic Acid
<b>EEGs</b>	: Electroencephalograms
<b>EIA</b>	: Enzyme Immuno Assay
<b>ELISA</b>	: Enzyme Linked Immunosorbent Assay
<b>HBsAg</b>	: Hepatitis B surface Antigen
<b>HIV</b>	: Human Immuno Deficiency virus
<b>HSV</b>	: Herpes Simplex Virus
<b>IF</b>	: Immuno Fluorescence
<b>IFAT</b>	: Indirect Fluorescent Antibody Technique
<b>Ig</b>	: Immunoglobulin
<b>IgA</b>	: Immunoglobulin A
<b>IgG</b>	: Immunoglobulin G
<b>IgM</b>	: Immunoglobulin M
<b>IU</b>	: International Unit
<b>LP</b>	: Lumbar Puncture
<b>MMR</b>	: Mumps Measles Rubella
<b>MRI</b>	: Magnetic Resonance Imaging

<b>NHANES</b>	:	National Health and Nutrition Examination Surveys
<b>NPHL</b>	:	National Public Health Laboratory
<b>PCR</b>	:	Polymerase Chain Reaction
<b>RNA</b>	:	Ribo Nucleic Acid
<b>RSA</b>	:	Recurrent Spontaneous Abortions
<b>RT-PCR</b>	:	Reverse Transcriptase-Polymerase Chain Reaction
<b>STI</b>	:	Sexually Transmitted Infections
<b>TORCH</b>	:	<i>Toxoplasma</i> , Rubella, Cytomegalovirus and Herpes Simplex Virus
<b>TSL-PAMF</b>	:	<i>Toxoplasma</i> Serology Laboratory-Palo Alto Medical Foundation
<b>UK</b>	:	United Kingdom
<b>US</b>	:	United States
<b>VDRL</b>	:	Venereal Disease Research Laboratory
<b>VZV</b>	:	Varicella Zooster Virus