



***SEROPREVALENCE OF NEWCASTLE DISEASE VIRUS(NDV)
ANTIBODIES IN PIGEONS IN SELECTED AREAS IN KLANG VALLEY,
MALAYSIA***

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**SEROPREVALENCE OF NEWCASTLE DISEASE
VIRUS (NDV) ANTIBODIES IN PIGEONS IN SELECTED AREAS
IN KLANG VALLEY, MALAYSIA**

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A project paper submitted to the Faculty of Veterinary Medicine,
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It is hereby certified that we have read this project paper entitled “Seroprevalence of Newcastle Disease Virus (NDV) Antibodies in Pigeons in Selected Areas in Klang Valley”, by Nurfatin Shakira Binti Zaini and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirement for the course VPD4999 – Final Year Project.

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DEDICATION

This project paper is dedicated to

To my parents,

Zaini Ramli & Norliza Ahmad

Sisters,

for the love,

**for always believe in me and for the endless
motivation and support.**

To all dearest birds,

for allowing me to complete my project.

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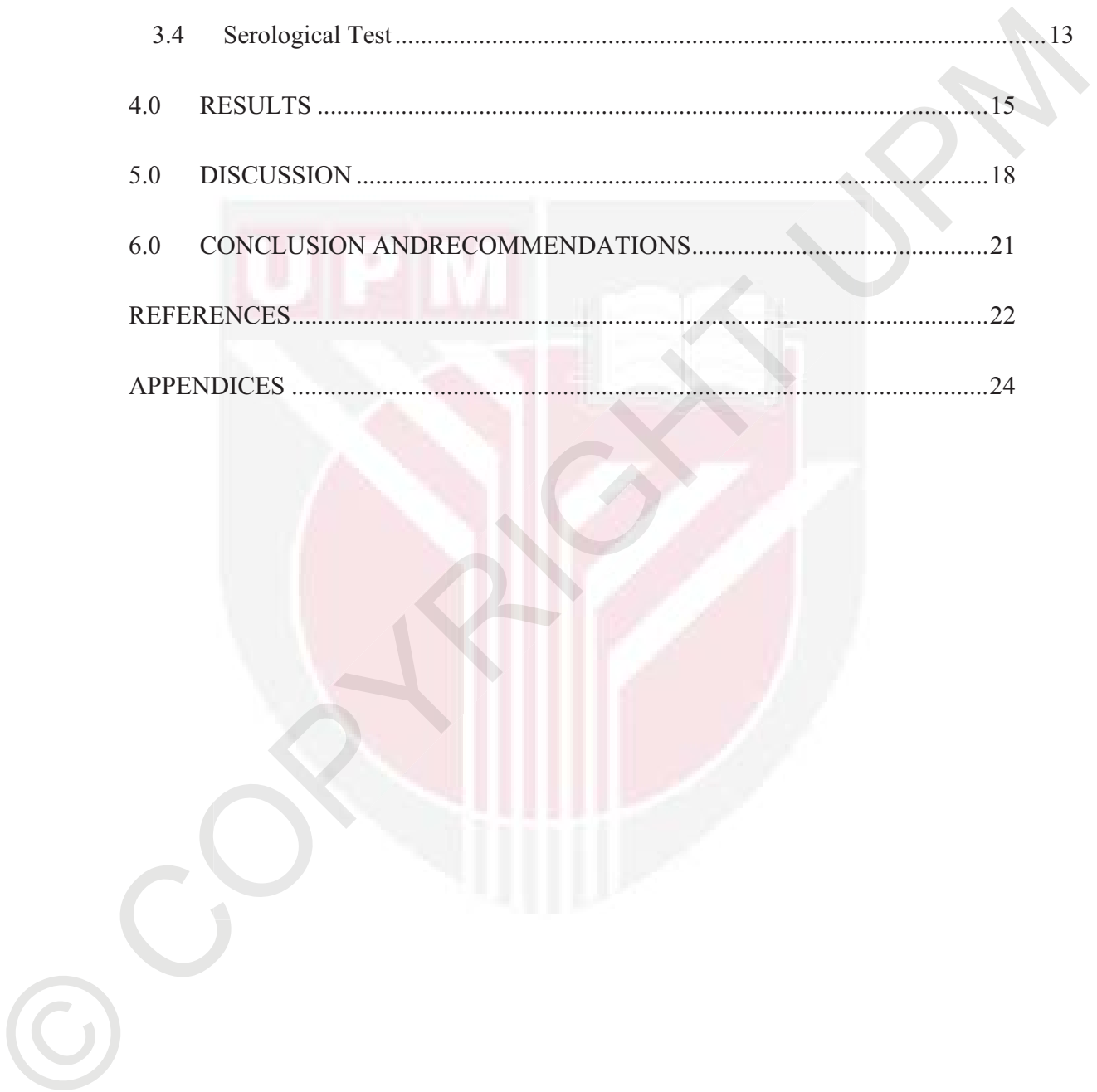
Finally, special thanks to my classmates DVM Class 2017 and everyone that helped me directly or indirectly throughout this study. Not forget, Assoc. Prof Amin, En. Nizam, En. Effie, En. Azmi for helping me with the birds sampling.



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LIST OF ABBREVIATIONS

NDV	Newcastle Disease Virus
ND	Newcastle Disease
HA	Hemagglutination test
HI	Hemagglutination inhibition test
IACUC	Institutional Animal Care and Use Committee
RBC	Red Blood Cell
Ag	Antigen
Ab	Antibody
°C	Degree Celcius
-ve	Negative
+ve	Positive
%	Percentage

ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4999-

Projek Ilmiah Tahun Akhir

PREVALEN ANTIBODI VIRUS PENYAKIT SAMPAR PADA BURUNG MERPATI DI KAWASAN TERPILIH DILEMBAH KLANG, MALAYSIA

Oleh

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2017

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Penyakit sampar adalah penyakit ayam domestik dan spesies burung lain yang disebabkan oleh virus Newcastle Disease (NDV) yang berasal dari keluarga Paramyxoviridae. Tiada kajian yang telah dilakukan mengenai seroprevalen antibodi terhadap NDV dalam merpati berbanding dengan ayam komersial di Malaysia, keperluan untuk melakukan seroprevalence awal ini adalah untuk mengetahui

kehadiran tahap antibodi terhadap NDV dalam merpati dan penting untuk mengukur klinikal yang mereka boleh, menyumbang sebagai pembawa penyakit sampar bagi kumpulan Galliformes. Penyakit sampar boleh disebarkan oleh hubungan secara langsung dengan berpenyakit atau pembawa burung, fomites, penetasan anak ayam, dari telur dijangkiti dan juga potensi penyakit zoonotik. Sebanyak 60 sampel sera merpati dikumpulkan dari dua kumpulan burung merpati; liar dan kurungan. Merpati telah disampel dari beberapa kawasan di Klang termasuk liar dan burung merpati kurungan. Sera itu telah dianalisis untuk kehadiran antibodi terhadap NDV menggunakan ujian HI. Daripada enam puluh sampel, 50.0% (30/60) sampel adalah seropositif untuk antibodi NDV. Merpati liar menunjukkan 41.7% (15/36) seroprevalen manakala merpati kurungan dengan 62.5% (15/24) seroprevalen. Ini bermakna bahawa burung merpati kurungan mempunyai seropositif lebih tinggi berbanding dengan merpati liar. Kesimpulannya, kajian ini membuktikan bahawa burung merpati terdedah kepada virus Newcastle Disease pada peringkat tertentu kehidupan mereka dan boleh menghasilkan antibodi terhadap NDV. Kajian lanjut perlu dilakukan dalam pengesanan virus dari najis, lendiran trakea dan hidung untuk menentukan sama ada burung merpati adalah takungan dan menyebarkan virus kepada persekitaran.



Kata kunci: Antibodi, haemagglutination perencatan, merpati, seroprevalen, virus Newcastle.

ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine as a partial requirement in the course VPD 4999-Final Year Project.

SEROPREVALENCE OF NEWCASTLE DISEASE VIRUS (NDV) ANTIBODIES IN PIGEONS IN SELECTED AREAS IN KLANG VALLEY, MALAYSIA

By

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2017

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Newcastle disease is a disease of domestic poultry and other bird species caused by Newcastle Disease virus from family of *Paramyxoviridae*. No study was done for NDV seroprevalence in pigeons compared to commercial chicken in Malaysia. Therefore, there is a need to do this preliminary seroprevalence study so that we are able to know the prevalence of antibody level against NDV in pigeons and further, it is important for clinical measure such as they may serve as reservoirs of ND for galliformes group. Newcastle Disease (ND) can be transmitted by direct contact with

diseased or carrier birds, fomites, hatching chicks from infected egg and also potential zoonotic disease. A total of 60 sera samples of pigeons were collected from two group of pigeons; wild and captive. Pigeons were sampled from several areas in Klang Valley. The sera had been analyzed for presence of antibodies against NDV using haemagglutination inhibition (HI) test. Out of sixty samples, 50.0% (30/60) samples were seropositive for NDV antibodies. Wild pigeons showed 41.7% (15/36) seroprevalence while captive pigeons with 62.5%(15/24) seroprevalence. This means that captive pigeons has higher seropositive compared to wild. In conclusion, this study proved that pigeons are exposed to Newcastle Disease virus at certain stage of their life and can develop antibodies against NDV. Further study should be done on virus detection and isolation from faeces, tracheal and nasal swabs to determine whether pigeons are reservoir and shedding the virus to the environment.

Keywords: Antibodies, haemagglutination inhibition, Newcastle disease virus, pigeon, seroprevalence

1.0 INTRODUCTION

Newcastle disease is a disease of domestic poultry and other bird species caused by Newcastle disease virus (NDV). It is a worldwide problem that presents primarily as an acute respiratory disease, but depression, nervous manifestations, or diarrhea may be the predominant clinical form. Severity depends on the virulence of the infecting virus and host susceptibility. The disease is present worldwide and affects many species of birds causing severe losses in the poultry sector (Cattoli *et al.*, 2011).

Occurrence of the disease is reportable and may result in trade restrictions. Newcastle Disease is on the A List of the World Organisation for Animal Health (OIE) which is notifiable disease, means need to be reported when the disease is diagnosed (OIE, 2012).

This disease can be transmitted by direct contact with secretions of infected birds via ingestion fecal-oral route and inhalation, fomites (e.g feed, water, human clothing) and also hatching chicks through egg (OIE, 2012). The incubation period is 2-15 days with an average of 5-6 days; some species may be over 20 days (OIE, 2012).

Birds in the *Columbiformes* order, which includes pigeons and doves, can be infected with NDV (Wakamatsu *et al.*, 2006). Pigeons are wild and freely to move which closely associated with human when they searching for food near to house compound which may cause zoonotic disease.

According to OIE (2012), humans may be infected with NDV by manifestation of unilateral or bilateral reddening, excessive lacrymation, oedema of the eyelids, conjunctivitis and sub-conjunctival haemorrhage.

In Malaysia, lack of knowledge whether pigeons are susceptible to natural infection with Newcastle Disease virus and potential for zoonotic transmission is difficult to explain for the awareness to the public.

The objective of this study includes:

To determine the seroprevalence of Newcastle Disease virus in pigeons in selected area in Klang Valley by detecting antibody titer using Haemagglutination Inhibition (HI) assay.

The hypothesis for this study is:

Pigeons in Klang valley, Malaysia are seropositive with NDV antibodies.

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