EFFECT OF CERTAIN ANTIBIOTICS ON THE IMMUNE RESPONSE OF CHICKENS TO NEWCASTLE DISEASE AND AVIAN INFLUENZA DISEASE VACCINES

Thesis Presented

By

Lamiaa Ahmed Ali Mohamed Ali

B.V.Sc.,Fac. Vet. Med., Alex. Univ., 2001

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Faculty of Veterinary Medicine
Alexandria University
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Prof. Dr. Helmy Ahmed Torky

Professor of Microbiology

Faculty of Veterinary Medicine

Alexandria University

Prof. Dr. Samy Abd El Salam Khalil

Professor of Microbiology

Faculty of Veterinary Medicine

Alexandria University

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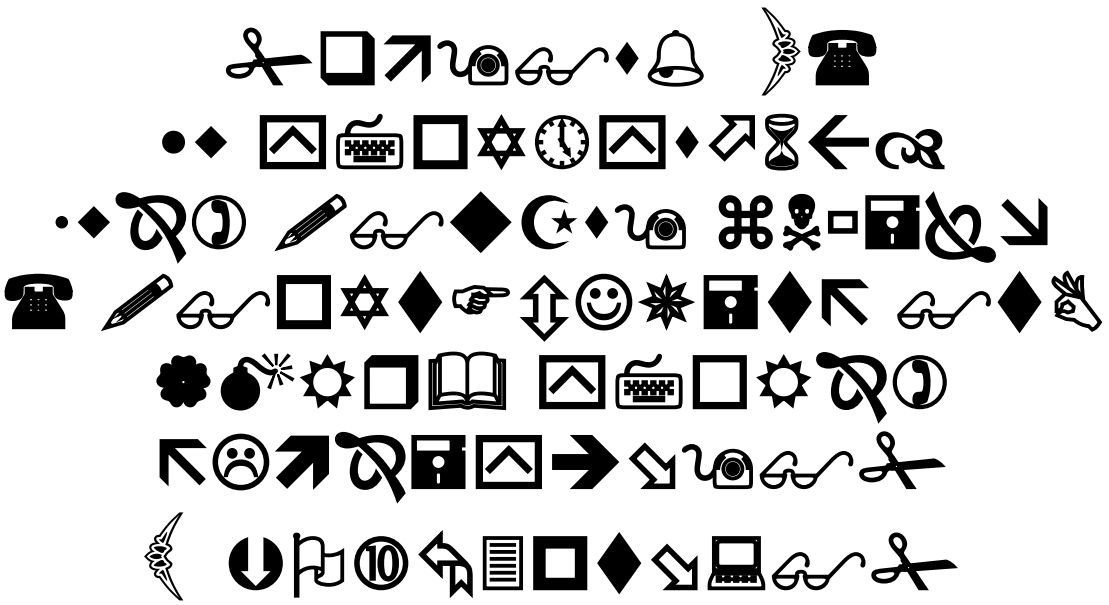

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I dedicate this thesis to

My family and my son

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Introduction

1. INTRODUCTION

Poultry keeping is the form of poultry production in the developing world, so we must control the infections to prevent great economic losses. Controls of infectious diseases in poultry depend upon adequate flock immunity. Reduced immune responsiveness leads to increased diseases losses that can seriously damage the poultry industry **(Mohamed, 1997).** The immune system of chickens may be suppressed by Infectious agents and non-infectious causes **(Enrique Montile, 1999)**. Infectious causes may include bacteria, viruses and internal parasites, while non-infectious causes include chemicals, hormones, antibiotics, toxins, environmental stresses and lack of dietary ingredient (**Mohamed, 1997).**

Many viral agents have been implicated in impressing the immune system of chickens; Newcastle disease **(Alexander , 1989; Calnek et al.,1991***)* and infectious bursal disease (IBD) **(Sherma et al.,1976 ; Sivanandant et al.,1980**) as well as other viruses.

Newcastle disease (ND) still from the most important avian diseases because of its high economic impact on the poultry industry **(Leslie,2000)**. Newcastle disease virus is synonymous with avian paramyxovirus type 1 (APMV-1) and has been classified in the order Mononegavirales, family paramyxoviridae, subfamily Paramyxovirinae, genus Rubulavirus **(Lamb et al., 1996; Alexander, 1997 and Alexander,1998).**

Over the past decade, the emergent avian influenza (AI) viruses have shifted to increase virulence for chickens. AI viruses typically produce a similar severe, systemic disease with high mortality in chickens). In Africa, H5N1 AI cases approved in February 2006 in several countries. It began in Nigeria then other African countries including Egypt **(Swayne, 2007).** Twenty six epizootics of AI have occurred in the world since 1995. The largest of these outbreaks has been the H5N1AI which has caused problems in poultry and some wild birds in over 60 countries of Asia, Europe and Africa since beginning in 1996. The spread of highly pathogenic avian influenza H5N1 viruses across Asia in 2003 and 2004 devastated domestic lethal H5N1 virus outbreak in humans to date **(Maines et al., 2005)** On17 February 2006, the Egyptian Government confirmed that avian flu had broken out in the nation's poultry.

Avian influenza is caused by infection with viruses of the family Orthomyxoviridae placed in the genus influenza virus A. Influenza A viruses are the only orthomyxoviruses know to affect birds. Many species of birds have been shown to be susceptible to infection with influenza A viruses; aquatic birds form a major reservoir of these viruses, but the overwhelming majority of isolates have been of low pathogenicity for chickens and turkeys. Influenza A viruses have antigenically related nucleocapsid and matrix proteins, but are classified into subtypes on the basis of their heamagglutinin (H) and neuraminidase (N) antigens **(World Health Organization Expert Committee,1980)**.

In many of viral infections humeral and cell mediated immune responses play a pivotal role in protection against such diseases (**kumar et al.,1988).** Both humeral and cell mediated immune responses are essential for complete protection **(Chandrasekar et al., 1989).**

Some antibacterial drugs interference with the immune response to viral vaccines **(lavel, 1989).** Although many antimicrobial agents have been reported to cause immunosuppression in animals, macrolide antibiotics enhance immune function **(Baba et al., 1998).**

In the present study, we have chosen spiramycin and tylosin which widely used in poultry farms. We have also chosen cefotan as advanced generation of antibiotics.

In view of these facts, this study was attempted to investigate the effect of spiramycin, tylosin or cefotan on immune response of chickens to NDV and AI vaccines. To achieve this aim, we carried the following:

a. Measuring the humeral immune response of chickens vaccinated with NDV and AIV vaccines by H.I. test.

b. Measuring the cellular immune response of chickens vaccinated with NDV and AIV vaccines by phagocytic activity.

C. Studying the effect of antibiotics (spiramycin, tylosin and cefotan) on the weight of lymphoid organs to body weight.

Review of literature