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**Title of thesis: Studies on The current Epidemiology of Avian influenza in
Chicken Farms in Egypt**

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Abstract

The current study was conducted to better understand the epidemiology of avian influenza virus (AIV) in the chicken farms in Egypt during 2012-2013. A total of 17 positive H5N1 and 39 positive H9N2 from 200 chicken farms were suffered from problems such as mortality and respiratory signs. Delta had the incidence of AIV H5 and H9 which was 9.4% and 18.8% respectively while the Upper Egypt recorded 7.7% and 20% Moreover the highest incidence of the disease was during the winter while the lowest incidence was during the summer. The intravenous pathogenicity index (IVPI) was conducted to assess the pathogenicity of 3 H5N1 AIV isolates. The IVPI of selected H5 viruses was range from 2.67 to 2.91 and this indicated that the selected H5 viruses were HPAI. And one of them had been used to evaluate Protective efficacy of the current available inactivated H5 vaccines (Re-H5N3, H5N2 and Re-H5N1 vaccines) and vectored AI (HVT-H5) vaccine under lab condition in broiler chickens. There was no vaccine able to afford the required protection against HPAI H5N1 2012 after single vaccination except the vectored AI (HVT-H5) vaccine afforded 93.3% protection.

Key words: Egypt, Avian influenza virus (AIV), H5N1, H9N2, vaccine and vaccination.

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الجنسية: مصري

تاريخ الميلاد: 1985 / 3 / 23

الدرجة المرشح لها: درجة الماجستير في العلوم الطبية البيطرية (أمراض الطيور والأرانب)
عنوان الرسالة: دراسات عن الوضع الحالي لوبائية مرض انفلونزا الطيور في مزارع الدواجن في مصر

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المستخلص العربي

لقد تم اجراء الدراسة الحالية لمحاولة فهم الوضع الوبائي لفيروس انفلونزا الطيور في مزارع الدجاج في مصر خلال 2012-2013 حيث تم تسجيل الاصابة في عدد 17 مزرعة دجاج ايجابية (بنسبة 8.5%) بمرض انفلونزا الطيور (H5N1) و 39 مزرعة دجاج ايجابية (بنسبة 19.5%) بمرض انفلونزا الطيور (H9N2). و سجلت الدلتا معدلات اصابة لمرض انفلونزا الطيور H9N2،H5N1 (9.4% و 18.8% على الترتيب) و في صعيد مصر (7.7% و 20% على الترتيب). وأظهرت النتائج أنه تم تسجيل أعلى معدلات الإصابة بالنسبة لمرض أنفلونزا الطيور في شهور الشتاء بينما تم تسجيل أقل معدلات الإصابة في شهور الصيف. وقد تم قياس درجات الامراضية لثلاث معزولات H5N1 عن طريق الحقن الوريدي و أثبتت نتائج أن جميع المعزولات الثلاثة من الفيروسات شديدة الضراوة وكانت معدلات الضراوة تتراوح بين 2.91 ، 2.67 . وقد تم استخدام احدى هذه المعزولات في تقييم 4 لقاحات لأنفلونزا الطيور (H5) المستخدمة في الحقل (H5N2 ، Re-H5N3 ، Re-H5N1 و H5N1) في دجاج تسمين تحت الظروف المعملية و أظهرت النتائج أن جميع التحصينات لم تعطي النتائج المرجوة بإستثناء لقاح HVT-H5 حيث أعطى نسبة حماية 93.3% .

الكلمات الدالة: مصر ، فيروس أنفلونزا الطيور ، H5N1 ، H9N2 ، اللقاح و التحصين.

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LIST OF ABBREVIATIONS

Aa	Amino acid
Abs	Antibodies.
Ag	Antigen
AGID	Agar gel immunodiffusion test.
AGPT	Agar gel precipitation test.
AI	Avian influenza.
AIVs	Avian influenza viruses.
ALSV	Avian Leucosis virus
APV	Avian pneumovirus
b.p	Base pair
CIA	Chicken infectious anemia
CDC	Centers for disease control and prevention
CEF	Chicken embryo fibroblast
CLQP	central Laboratory of veterinary quality control on poultry production
DFA	Direct fluorescent antibody
DIVA	Differentiating infected from vaccinated avian influenza.
DNA	Deoxyribonucleic acid.
DOC	Day old chicken
DPI	Day post inoculation
DPC	Day post challenge
DW	Distilled water
ECE	Embryonated chicken eggs.
EDTA	Ethylene diamine tetra acetic acid
EID₅₀	Embryo infective dose fifty.
ELISA	Enzyme linked immunosorbent assay.
GOVS	General organization for veterinary services
H	Haemagglutinin
HA	Hemagglutination.
HAO	Inactive hemagglutinin precursor
HAU	Hemagglutinating unit
HI	Hemagglutination inhibition test.
HPAI	Highly pathogenic avian influenza.
IB	Infectious Bronchitis
IBD	Infectious Bursa disease
IFT	Immunofluorescence test
ILT	Infectious laryngotracheitis
IV	Intravenous
IVPI	Intravenous pathogenicity index.
LBM	Live bird markets.

LPAI	Low pathogenic avian influenza.
LPM	Live poultry markets.
M	Matrix protein.
MD	Mark's disease
MDCK	Madin-Darby Canine Kidney cells.
MDT	Mean death time
Min	Minutes
MP	Mildly pathogenic.
MPAI	Mildly pathogenic avian influenza.
mRT-PCR	Multiplex reverse transcriptase PCR.
N	neuraminidase
NA	Neuraminidase.
NAI	Notifiable avian influenza.
NASBA	Nucleic acid sequence-based amplification.
NEP	Nuclear export protein
NP	Nuclei protein.
NS	Nonstructural protein.
OIE	Office des epizootic international (World Animal health organization).
PA	Polymerase acid
PB1	Polymerase basic protein 1
PBS	Phosphate buffer saline
PCR	Polymerase chain reaction.
Pi	Post inoculation
RG	Reverse genetic
RNA	Ribonucleic acid.
RRT-PCR	Real time - RT- PCR.
RT-PCR	Reverse transcriptase-PCR.
SNA	Specific antibody negative.
SPF	Specific pathogen free.
TBE	Tris- Borate EDTA
TE	Tris- EDTA
T.M	Melting temperature
TRT	Turkey rhinotracheitis
VI	Virus isolation.
VLA	Veterinary lab. Agency.
VTM	Virus Transport Medium
WHO	World health organization.