بسم الله الرحمن الرحيم

قال تعالي:

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سورة الفلق آيةرقم (5)

صدق الله العظيم

Dedication

To the soul of my father,

To my dear mother, my sisters, brother

with my love

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LIST OFABBREVIATIONS

AAF	Amnioallantoic fluid
AF	Allantoic fluid
APMV-1	Avian paramixovirus -1
CEF	Chick embryo fibroblast
CELD 50%	Chick embryo lethal dose 50%
CPE	Cytopathic effect
CRBCs	Chicken red blood cells
DEAE	Diethylalminoethyl
DNA	Deoxyribonucliec acid
(F) protein	Fusion protein
HA	Haemagglutination
HI	Haemagglutination inhibition
HRBCs	Horse red blood cells
ICPI	Intracerebral pathogenicity index
IVPI	Intravenous pathogeniciy index
IZSVe	Inisituto zooprofiliattico sperimentale delle venezie
OIE	Office international des epizootic
PCR	Polymerase chain reaction
PI	Post -inoculation
MDT	Mean death time

MLD	Minimum lethal dose
ND	Newcastle disease
NDV	Newcastle disease virus
RBCs	Red blood cells
RT	Reverse transcription
RNA	Ribonucleic acid
SPF	Specific pathogen free
TBE	Tris –borate –EDTA
TAE	Tris –acetate –EDTA

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ملخص الاطروحة

تم اجراء مسح حقلي لتحديد مدى انتشار مرض النيوكاسل في الفترة من 2008-2010 و قد شمل المسح عدة مزارع من ولاية الخرطوم و تم أخذ العينات لتحديد مدي ضراوة المرض بقياسها معمليا باختبار حقن المخيخ و الذي سجل 1,83 للعينات المرض عالية الضراوة 0,1 للمرض ذو الضراوة المنخفضة.

عدد العينات التي تم فحصها 18 عينة و عند اختبارها باستخدام اختبار تثبيط التلازن الدموي باستخدام كريات الدم الحمراء للفواجن كانت كل العينات ايجابية في عينات المرض ذو الضراوة العالية و المنخفضة. و عند مقارنتها باستخدام كريات الدم للحصين كانت ايجابية للعينات المنخفضة الضراوة و سلبية للعالية الضراوة لذلك يمكن استخدام هذا الاختبار بكريات دم الحصين للتوقف على المرض شديد الضراوة .

كل العينات عندما حقنت في النسيج الخلوي لخلايا الفواجن اظهرت الاثر المرضي خلال 24-48 ساعة بعد الحقن بينما ظهر للعينات المتوسطة الضراوة بعد اضافة مصل العجل.

عند استخدام العينات للطيور المصابة من الاعضاء كالرئة ،والقصبة الهوائية ،الطحال ، المخ،الكلية وحقنها في اجنة بيض الدجاج في عمر 9 - 11 يوم كلها نفقت خلال 48 ساعة بعد الحقن و كانت كمية الفيروس في السوائل السقائية في المدى بين 8 - 256.

العينات النسيجية من الفواجن المحقونة في الريد عند عمر 8 اسابيع بعد وضعها في 10% فورمالين في خلايا المخ ، الرئة ، القصبة الهوائية ، الرئة و الكليه ، غدة فابريسي ، ظهر الاثر المرضي في كل الانسجة المذكورة و قد تم عزل الفيروس من هذه الاعضاء كلها للمرض ذو الضراوة العالية.

تم ارسال السوائل السقائية للمعمل المرجعي لتشخيص مرض النيوكاسل وانفلونزا الطيور بايطاليا والتابع لمنظمة الاغذية والزراعة مكتب الابئة الولي لاجراء اختبارات تاكيدية لتشخيص المرض واسطة اختبار الوقت الحقيقي واختبار تفاعل البلمرز التسلسلي السريع لمعرفة الاحماض الامينية المرجودة في منطقة انقسام الهيماقلوثينين التي اضحت عدد من الاحماض الامينية في منطقة الانقسام RRQKRF وهو مؤشر لتصنيف المرض كمرض شديد الضراوة ينتمي للسلالة رقم 5 مما اظهر خلو السودان من شكل المرض الجديد الذي ينتمي للسلالة رقم 7 الذي تم عزله بمنطقة غرب ووسط افريقيا .

Abstract

A field survey for the prevalence detection of Newcastle Disease in Khartoum State was carried out in the period 2008 -2010,and to study the antigenic and pathotype characteristics, which will lead to understanding the types of the disease prevailing and enable to compare them with the current vaccine strains.

The virulence of NDV was determined in the laboratory by experimental inoculation of disease- controlled day old chicks with the isolates. The intracerebral pathogenicity index, (ICPI) values were found to be 1.83 and 0.1 for virulent and avirulent isolates respectively.

A total of 18 isolates were examined by hemagglutination activity. HA activity was detected in all the 18 samples when the chicken red blood cells (RBCS) were used, while when the horse RBCS were used only 10 samples agglutinated them indicating that they were lentogenic, whereas the other 8 were velogenic and were negative.

The hemagglutination inhibition (HI) test results showed that all allantoic fluids were inhibited when tested against positive ND antisera.

All viruses revealed clear CPE 24-48 hours p.i. in chick embryo fibroblast cell culture. Plaques were observed only after inoculation of virulent strains and after the addition of bovine serum albumen to the overlay medium. Hence plaque production in cell culture can be used to differentiate between virulent and a virulent pathotypes of the virus.

Organs (bursa, spleen, lung, bone marrow, trachea, cecal tonsils, kidney, brain, intestine) were collected and inoculated in 9-11 day old

embryonated chicken eggs. All the embryos died within 48 hours post inoculation and the virus titer ranged from 8-256 for the virulent groups, and no virus titer was recorded for avirulent positive isolates, probably due to the short incubation period.

Tissue samples from both virulent and avirulent isolates including spleen, bursa, lung, brain, trachea, and .intestine were collected after intravenous inoculation of 8-weeks old chickens; these were fixed in 10% formalin and examined microscopically for histopathological changes.

Allantoic fluids were sent to OIE, FAO and National Reference Laboratory for Newcastle disease and avian influenza in Italy for advance confirmation by using molecular analysis at the cleavage site of the fusion glycoprotein (F protein), all samples which were previously confirmed positive by conventional methods were found positive using one step RT – PCR; nucleotide sequencing were also found positive.

This work reported the absence of the circulation of the new genetic lineage, described in the Western and Central parts of Africa; all Sudan NDV isolates belong to genotype 5d, containing the virulent fusion protein cleavage site (FO) motif ^{112}RRQKRF^{117}.