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Prevention and control of three important avian disease ND、IB and EDS

Dr. Wang Fei

May. 2026

Quality Yield Health

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Brief Introduction

Dr. Fei Wang
Harbin Veterinary Research Institute, CAAS
China Agriculture University

Technical director of QYH.

Oversee QYH Poultry Disease Surveillance Center and vaccine production process optimization.

Focus on the research and development of genetically engineered vaccines, such as reverse genetic vaccines ,live virus vector vaccines, recombinant protein vaccines, and therapeutic antibodies.

Undertake major vaccine R&D projects and published over 10 pieces of academic article on SCI-indexed journals, such as Science, Nature Commmunications.

CONTENT

- 01. Epidemiology of ND、IB and EDS
- 02. Introduction of QVAC ND G7 vaccine
- 03. Introduction of QVAC ND+IB+EDS vaccine
- 04. Recommended vaccination program



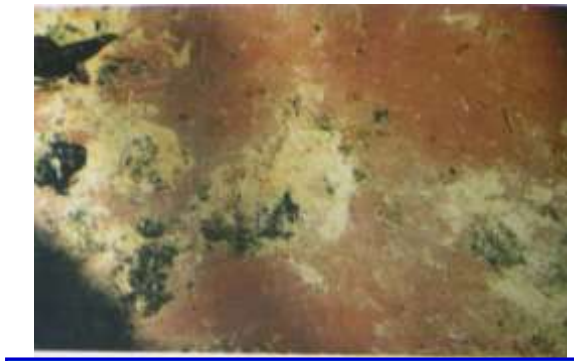

Newcastle Disease

- Newcastle disease is one of the most improtant poultry diseases worldwide, affecting a wide variety of birds and causing significant economic loss in the poultry industry.

- First discovered in Indonesia and Newcastle in the UK，1926.

ND Neurological symptoms

Adenogastric papilla and duodenal lymph node hemorrhage



Yellowish-green watery feces

Bleeding from lymphoid collections in the small intestine and enlarged tonsils in the cecum

Newcastle Disease

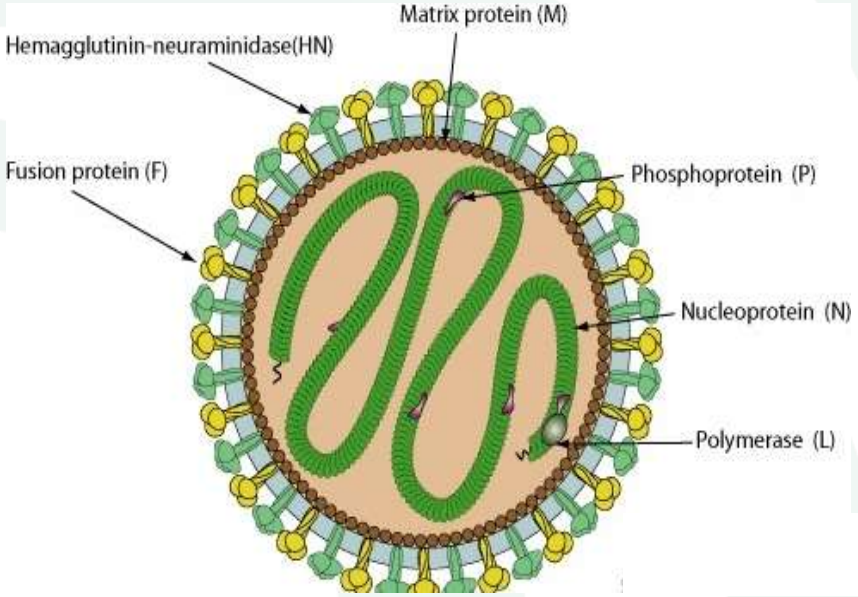
Four major outbreaks of Newcastle disease

Number	Duration	Genotype
First	1920-1960	II、III、IV
Second	1960-1970	V、VI
Third	1970-1980	VIb
Fourth	1980-now	VII

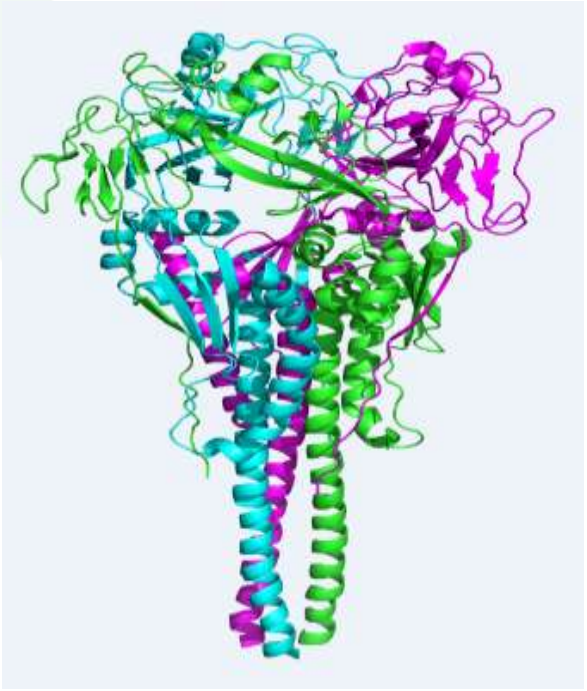
Vaccination is also the best way to reduce the losses.

01. Epidemiology of ND 、IB and EDS

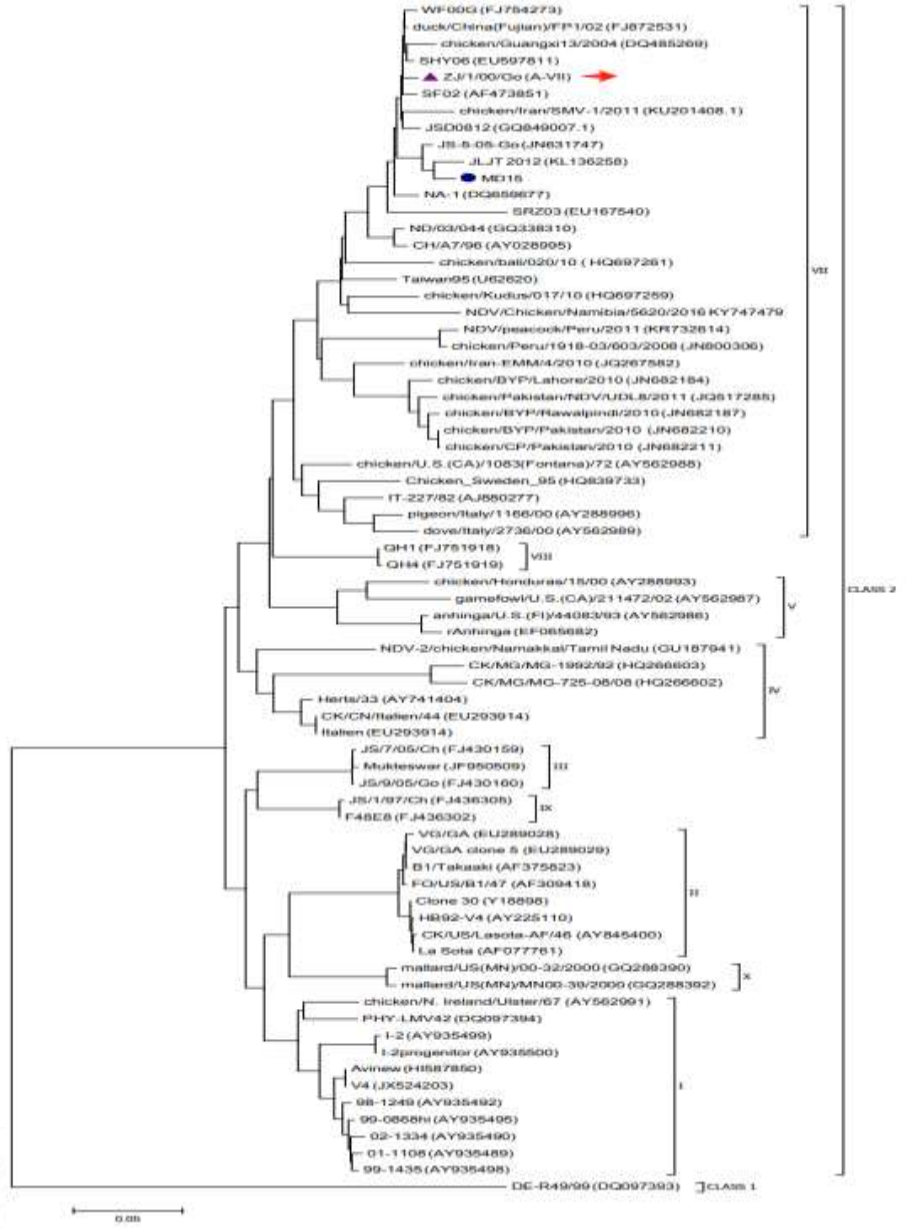
Newcastle Disease Virus



Structure of NDV



Structure of F protein



- At present, gene analysis based on NDV-related molecular epidemiological data shows that the genotype VII has become a major dominant against poultry industry in Egypt and other countries.

Newcastle Disease in Egypt

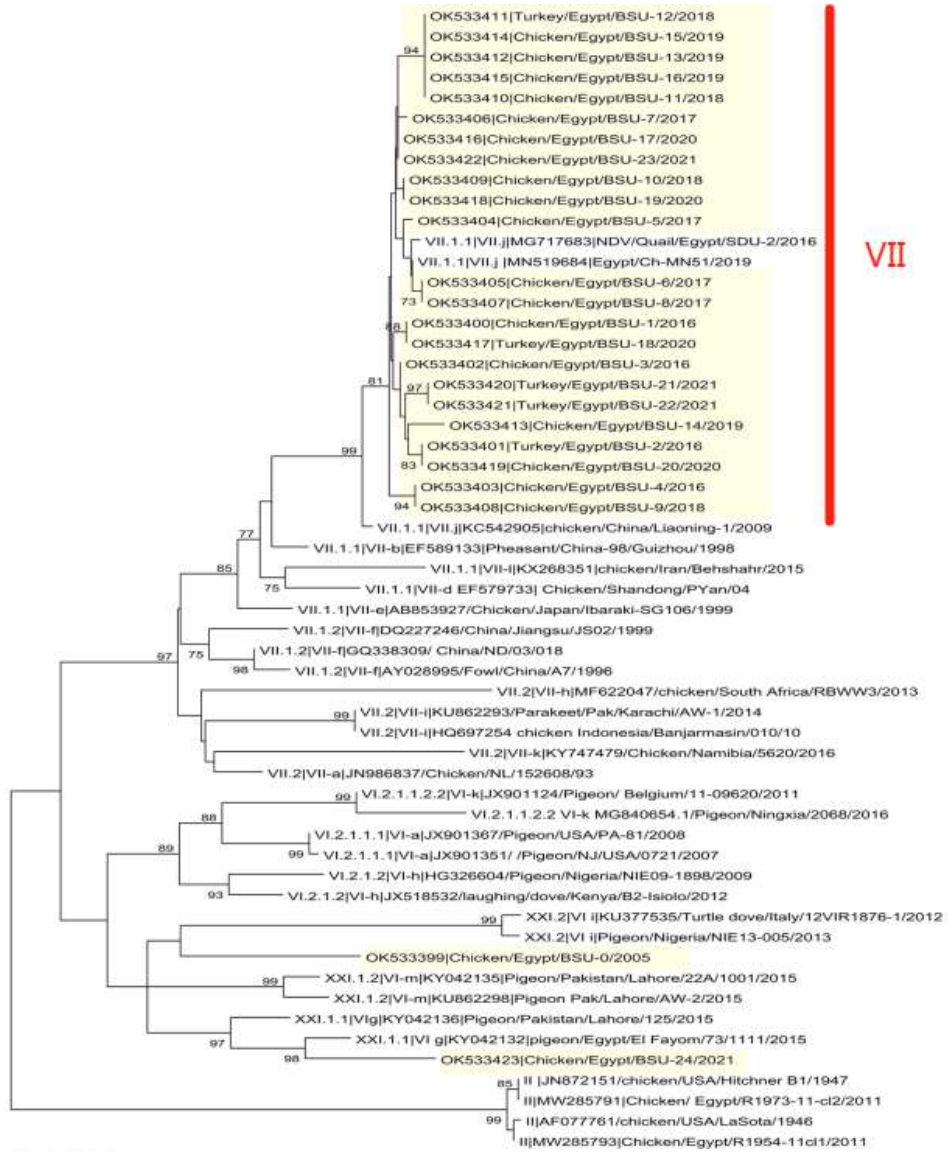
Epidemiological surveillance of Newcastle disease virus in Egypt — a 6-year cohort study

Khaled G. A. Abozaid[1,2] · Ahmed S. Abdel-Moneim[3]

Received: 22 November 2021 / Accepted: 13 July 2022 / Published online: 1 August 2022

Abstract

Newcastle disease (ND) is one of the most important poultry diseases worldwide and can lead to annual losses of up to 80% of backyard chickens in Africa. A retrospective cohort of 6 years was planned to screen the NDV in intensive chicken and turkey flocks. The existence of velogenic NDV strain was screened in different poultry flocks showing suspected signs of NDV using real-time RT-PCR targeting the F gene of the velogenic strain. A total of 843 poultry flocks were screened during the cohort. Samples were classified based on the month and year as well as the poultry type. All flocks should be negative for avian influenza virus as an inclusion criterion of the study. The F gene of a randomly selected positive sample from each year as well as an archival sample from 2005 was sequenced. An overall of 52.4% (443/842) of the tested farms showed positive results for the velogenic NDV. The cumulative percentage of positive flocks to the total positive flocks per month ranged from 5.9 to 11.8%. The results revealed that NDV is circulating across all months annually without evidence of seasonal tendency of the disease. Most of the strains belong to genotype VII.1.1, with only two strains related to XXI.1.1 and XXI.2. All VII.1.1 strains possess arginine at 27 position while XXI.1.1 and XXI.2 strains showed cysteine at 27 and amino acid substitutions in the signal peptide, cleavage site, and neutralizing epitopes. In conclusion, the current molecular epidemiological surveillance confirms the enzootic nature of NDV. It circulates all year round with no evidence of seasonal incidence Genotype VII is the most predominant NDV genotype in Egypt.



Khaled,Ahmed S. 2022

01. Epidemiology of ND 、IB and EDS

Newcastle Disease in Egypt

Evolution of Newcastle disease virus in Egypt.

Saad A. Moussa*, Mohammed Ahmed Mahmoud Abdullah, Ehab E. Nabawy*****.

* Animal Health Research Institute, Agriculture Research Center (ARC), Egypt.

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Keywords:

Newcastle disease
protective immunity

ABSTRACT

In Egypt, Newcastle disease virus (NDV) outbreaks are occurring frequently, researchers try to study epidemiology of the virulent NDV isolates from these outbreaks. Velogenic & mild NDV strains was successfully isolated in Egypt from 1950 till now. NDV still reported to cause severe outbreaks with high losses in infected flocks during 2005, velogenic NDV caused outbreaks among commercial chicken in Egypt so, it is obligatory to study the protective immunity of commercially available vaccines for prevention and control of the disease. VIIb NDV genotype was previously described as the predominant sub-genotype of genotype VII circulating with severe outbreaks in Egypt in last decade.

Saad A., Mohammed,Ehab, 2023

Investigation of suspected Newcastle disease (ND) outbreaks in Egypt uncovers a high virus velogenic ND virus burden in small-scale holdings and the presence of multiple pathogens

Ibrahim Moharam[a,b], Alaa Abd el Razik[b], Hesham Sultan[b], Mohammed Ghezlan[c], Clement Meseko[d], Kati Franzke[a], Timm Harder[a], Martin Beer[a] and Christian Grund[a]

[a]Institute of Diagnostic Virology, Friedrich Loeffler Institut, Greifswald - Insel Riems, Germany; [b]Department of poultry disease, University of Sadat City, Sadat City, Egypt; [c]Private poultry consultant, El Giza, Egypt; [d]Virology Department, National Veterinary Research Institute, Vom, Nigeria; [e]Institute of Infectology, Friedrich-Loeffler-Institut, Greifswald - Insel Riems, Germany

ABSTRACT

Highly contagious Newcastle disease (ND) is associated with devastating outbreaks with highly variable clinical signs among gallinaceous birds. In this study we aimed to verify clinical ND suspicions in poultry holdings in Egypt suffering from respiratory distress and elevated mortality, comparing two groups of ND-vaccinated poultry holdings in three governorates. Besides testing for Newcastle disease virus (NDV), samples were screened for infectious bronchitis virus (IBV) and avian influenza virus (AIV) by RT-qPCR as well as by non-directed cell-culture approach on LMH-cells. Virulent NDV was confirmed only in group A (n = 16) comprising small-scale holdings. Phylogenetic analysis of the fusion protein gene of 11 NDV-positive samples obtained from this group assigned all viruses to genotype 2.VIIb and point to four different virus populations that were circulating at the same time in one governorate, indicating independent epidemiological events. In group B, comprising large commercial broiler farms (n = 10), virulent NDV was not present, although in six farms NDV vaccine-type virus (genotype 2.8) was detected. Besides, in both groups, co-infections by IBV (n = 10), AIV H9 (n = 3) and/or avian reovirus (ARV) (n = 5) and avian astrovirus (AstoV) (n = 1) could be identified. Taken together, the study confirmed clinical ND suspicion in small scale holdings, pointing to inefficient vaccination practices in this group A. However, it also highlighted that, even in an endemic situation like ND in Egypt, in cases of suspected ND vaccine failure, clinical ND suspicion has to be verified by pathotype-specific diagnostic tests.

ARTICLE HISTORY
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KEYWORDS
Newcastle disease; respiratory disease; co-infection; diagnosis; Egypt; epidemiology

Ibrahim, 2019

Molecular Characterization of Newcastle Disease Virus Genotype VII.1.1 from Egyptian Mallard Ducks with Nervous Manifestations

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[2]Egyptian Company for Biological & Pharmaceutical Industries (Vaccine Valley), 6th October City, 12511, Giza, Egypt
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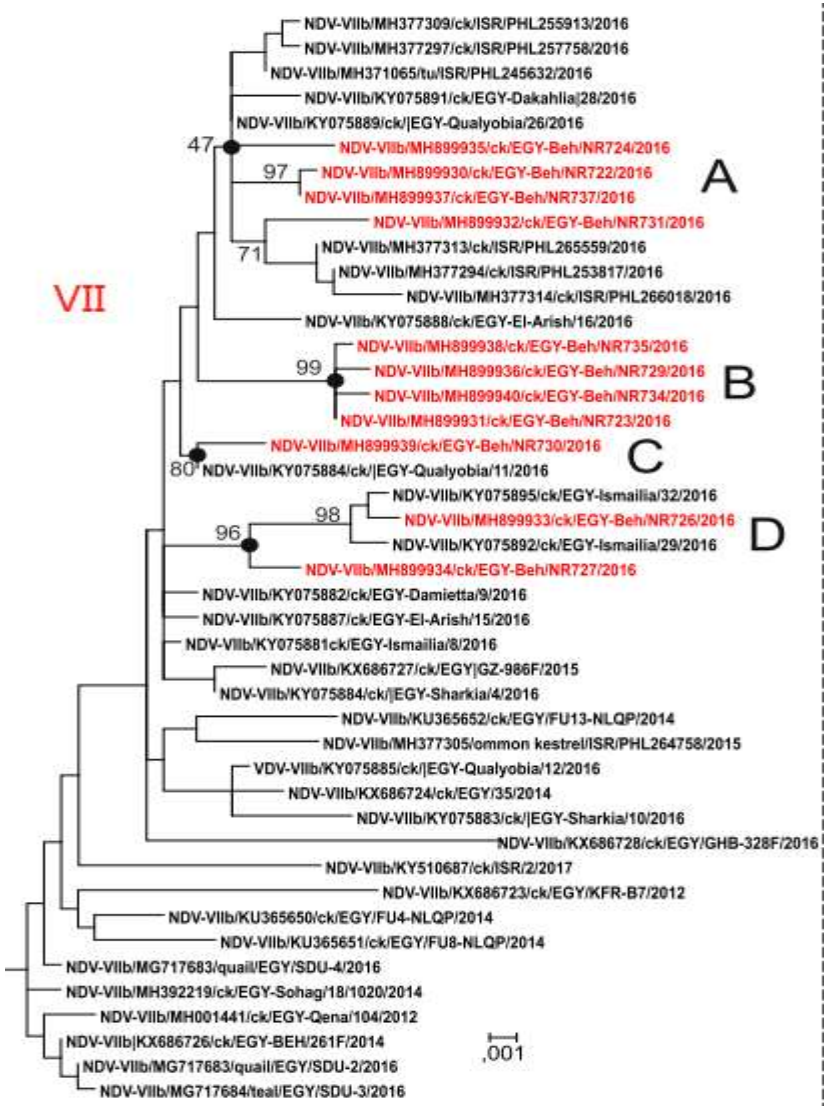
ABSTRACT

In Egypt, Newcastle disease virus (NDV) strains of genotype VII are known to be mild in domestic waterfowl and considered reservoirs. This is the first report for the detection of NDV GVII.1.1 from ducks showing severe clinical signs with high mortalities and nervous manifestations, additionally, isolation of NDV and molecular characterization for full HN and F genes were performed. In the current study, 16 backyard mallard duck flocks showing severe nervous signs with high mortalities were investigated by real-time RT-PCR using primers specific for the Fusion gene of NDV and matrix gene for avian influenza virus (AIV). Fourteen duck

Mahmoud, 2024

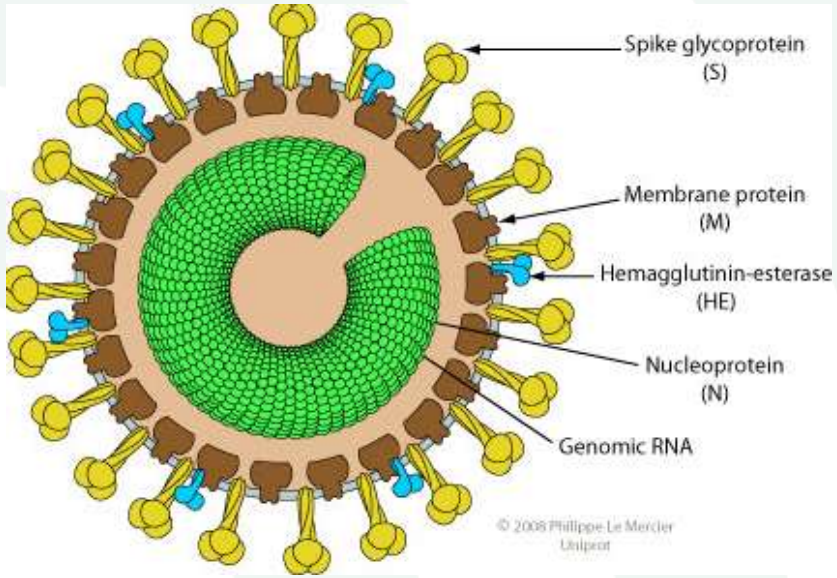


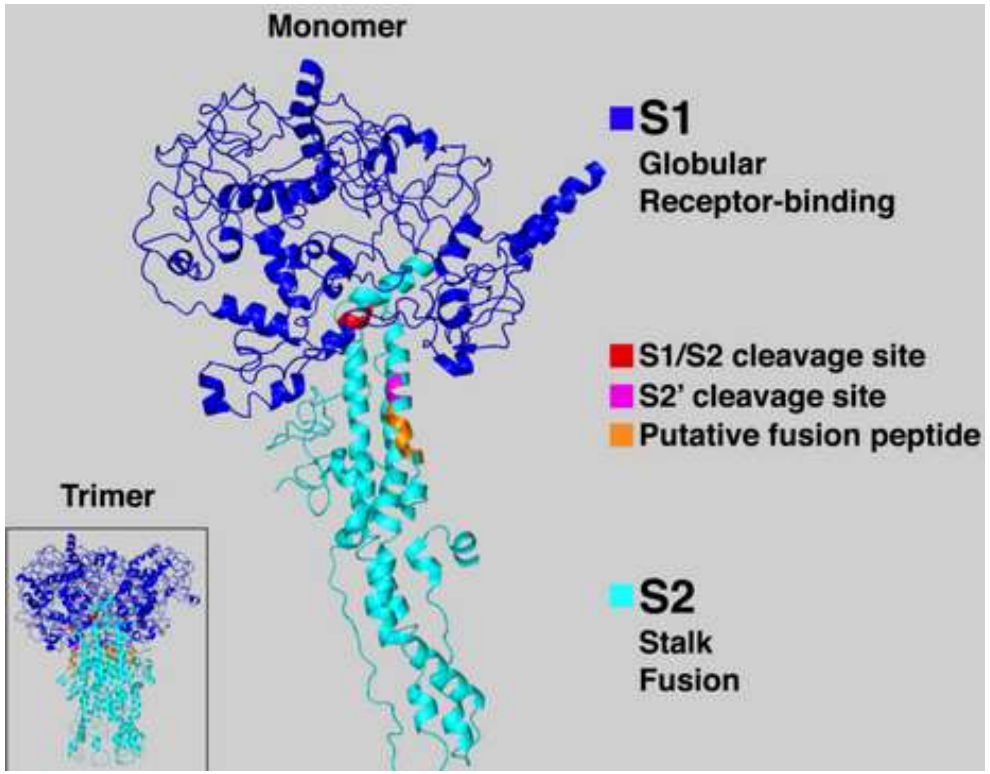
Infectious Brochitis Disease

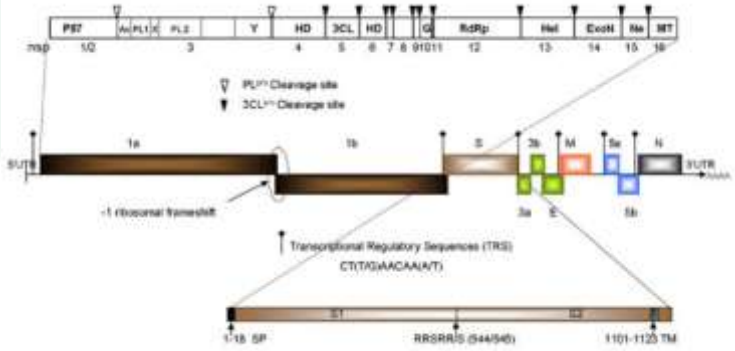
- Infectious Brochitis Disease (IB) is a highly infectious viral disease of poultry that continues to inflict severe economic damage to the poultry industry.
- IBV belong to Coronavirinae，Gammacoronavirus.
- The infection may cause various clinical forms to the respiratory system, digestive system, urinary system, and reproductive tract system.
- Divided into respiratory type, reproductive type, renal type, and proventriculus-lesion-inducing type etc.



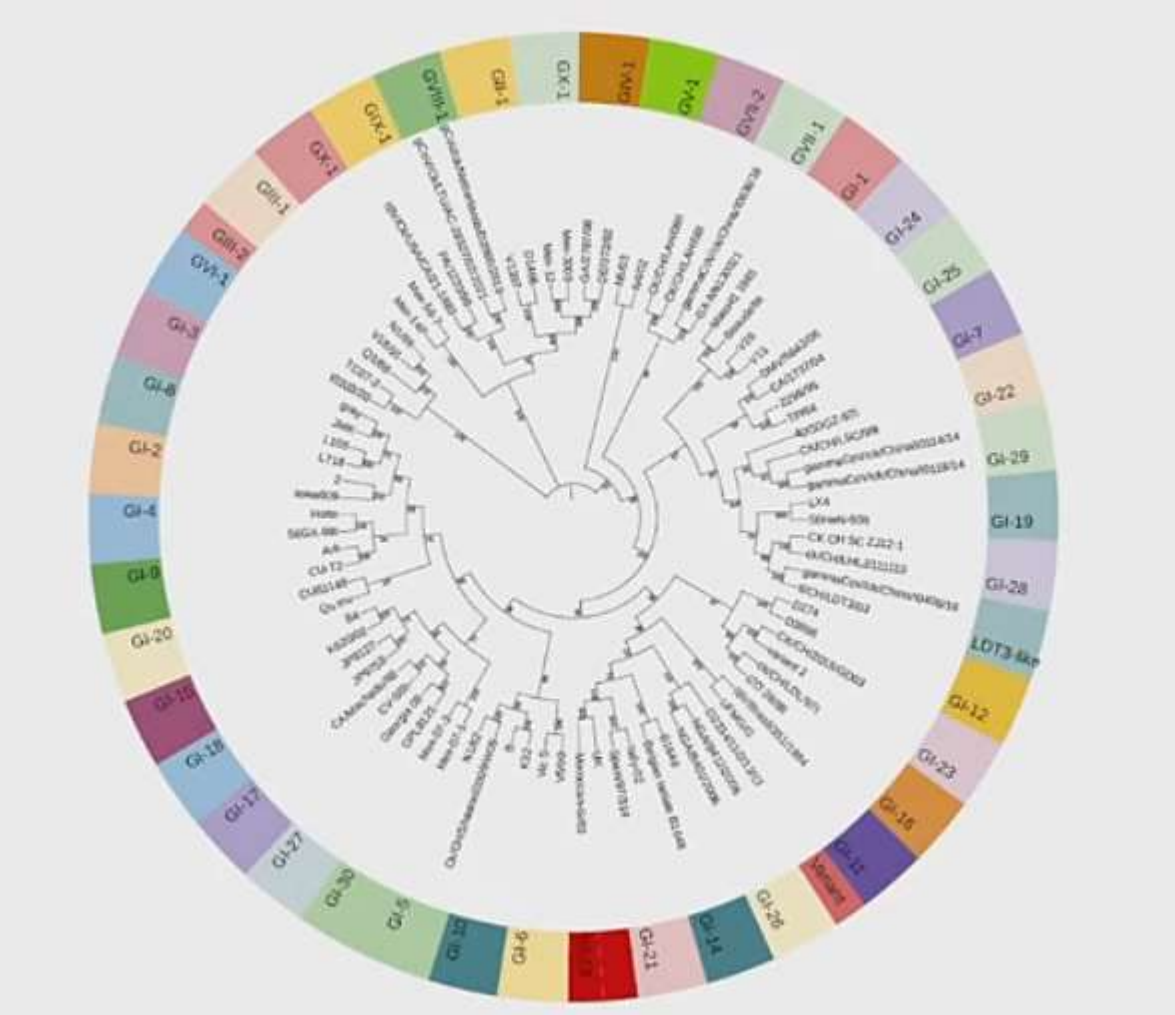

Infectious Brochitis Virus







01. Epidemiology of ND、IB and EDS



Genotype	Lineage	Frequency（At least）
GI	GI-1~GI-30	4280
GII	GII-1	79
GIII	GIII-1	4
GIV	GIV-1	157
GV	GV-1	7
GVI	GVI-1	124
GVII	GVII-1~GVII-2	13
GVIII	GVIII-1~GVIII-2	16
GIX	GIX-1	2
GX	GX-1	3
Total		4685

Infectious Brochitis Virus

veterinary sciences

MDPI

Review

Infectious Bronchitis Virus in Egypt: Genetic Diversity and Vaccination Strategies

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2 Reference Laboratory for Veterinary Quality Control on Poultry Production, Animal Health Research Institute, Agriculture Research Center, Giza 12618, Egypt
3 Zoonosis Science Center, Department of Medical Biochemistry and Microbiology, Uppsala University, 751 21 Uppsala, Sweden
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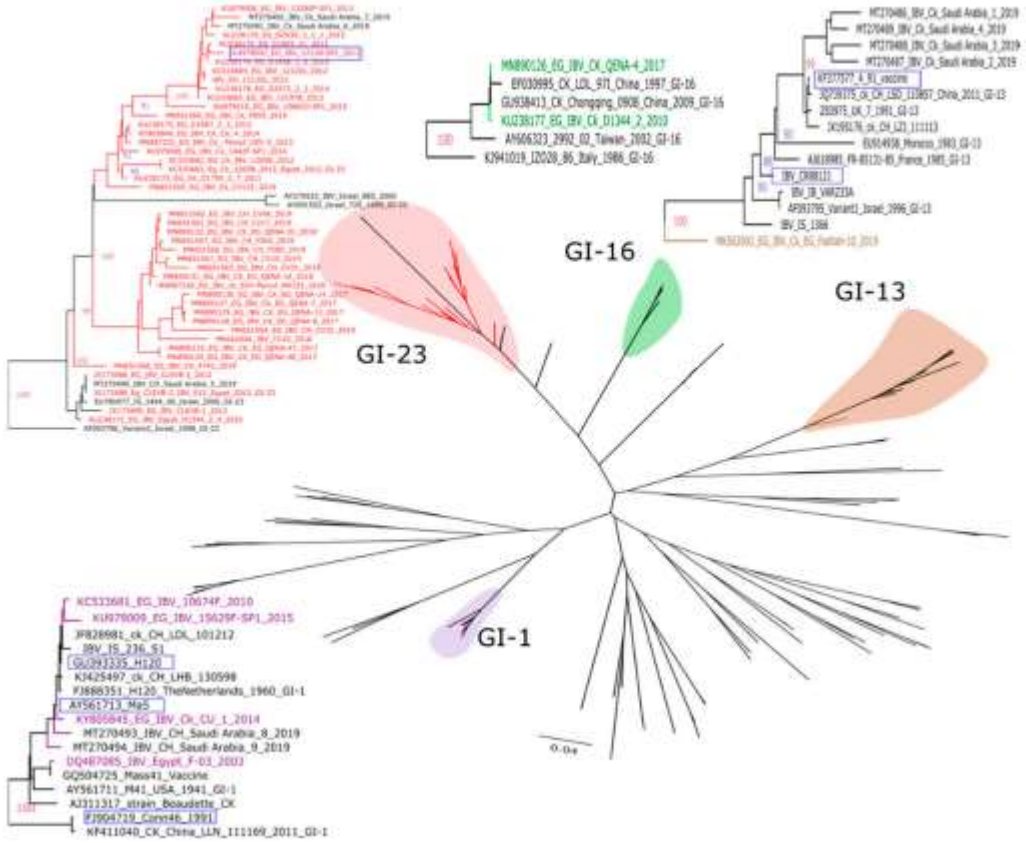
check for updates

Abstract: Infectious bronchitis virus (IBV) is a highly evolving avian pathogen that has increasingly imposed a negative impact on poultry industry worldwide. In the last 20 years, IBV has been continuously circulating among chicken flocks in Egypt causing huge economic losses to poultry production. Multiple IBV genotypes, namely, GI-1, GI-13, GI-16, and GI-23 have been reported in Egypt possessing different genetic and pathogenic features. Different vaccine programs are being used to control the spread of the disease in Egypt. However, the virus continues to spread and evolve where multiple IBV variants and several recombination evidence have been described. In this review, we highlight the current knowledge concerning IBV circulation, genesis, and vaccination strategies in



Hassanein H.Abozeid, et al. 2020.

01. Epidemiology of ND 、 IB and EDS

RESEARCH Open Access

A full-length *S1* gene sequencing of a novel emerged GI-19 and GI-23 lineages of *Infectious bronchitis virus* currently circulating in chicken flocks in upper Egypt reveals marked genetic diversity and recombination events

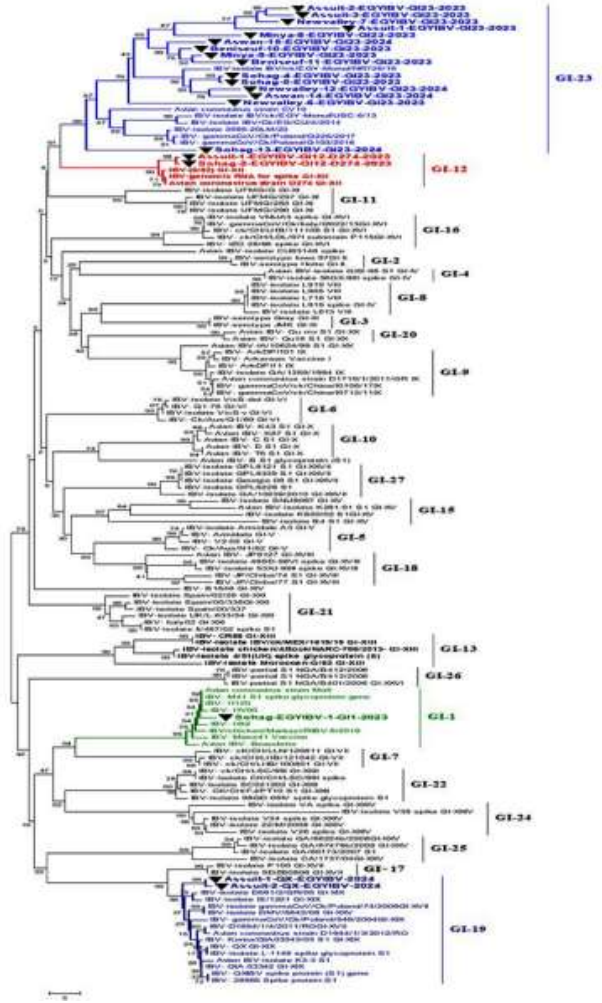
Eman Shosha[1*], Sara Abdelnaser[1] and Ali Mahmoud Zanaty[2]

Abstract

Background *Infectious bronchitis virus* (IBV) is a highly contagious evolving pathogen that causes respiratory, urinary and reproductive symptoms; threatening the poultry industry globally.

Methods During this study, 90 tissue specimens were collected from various poultry flocks of seven Upper Egypt governorates from 2023 to 2024 for genetic characterization.

Result Typical IBV lesions of the inoculated embryos in the specific-pathogen-free-embryonated chicken eggs (SPF-ECE) were observed. Using real-time reverse transcriptase polymerase chain reaction (rRT-PCR) assay targeting the conserved N gene, only 60 samples were considered positive with 66.6%. Collectively, 23 tissue specimens were examined through a one-step PCR assay. Sequencing is targeting the *S1* gene, and the phylogenetic analysis was conducted based on partial sequencing showed that *Avian coronavirus* (ACoV) isolates belong to GI-23 (n = 18), GI-12 (n = 2), GI-1 (n = 1), and GI-19 (n = 2). Genotyping of the *S1* gene indicates that GI-23 shows a genetic similarity to Egyptian isolates, and Israeli variants with nucleotide identity percentages (95–97%) and, (88–92%); respectively. Concerning full sequencing, five ACoV isolates were clustered as GI-23 (n = 3), and GI-19 (n = 2). Currently, QX-strains showed low genomic relatedness with Egyptian strains, and vaccinal strains with nucleotide (78–79%),



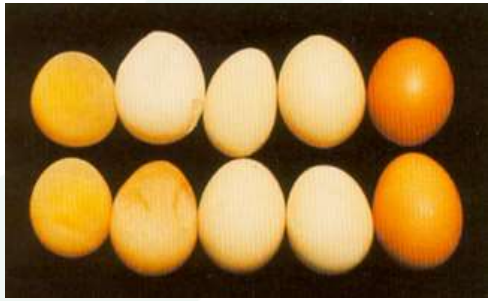
Eman Shosha, et al. 2025.

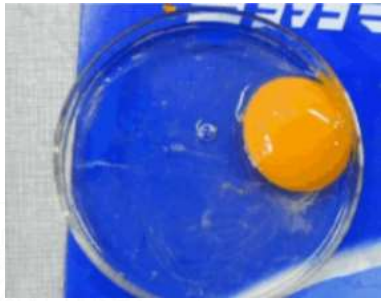
Egg Drop Sydrome

- Egg Drop Syndrome (EDS) is an infectious disease caused by Egg Drop Syndrome Virus (EDsV), characterized primarily by laying hens producing thin-shelled or shell-less eggs, and a significant decrease in egg production rate.

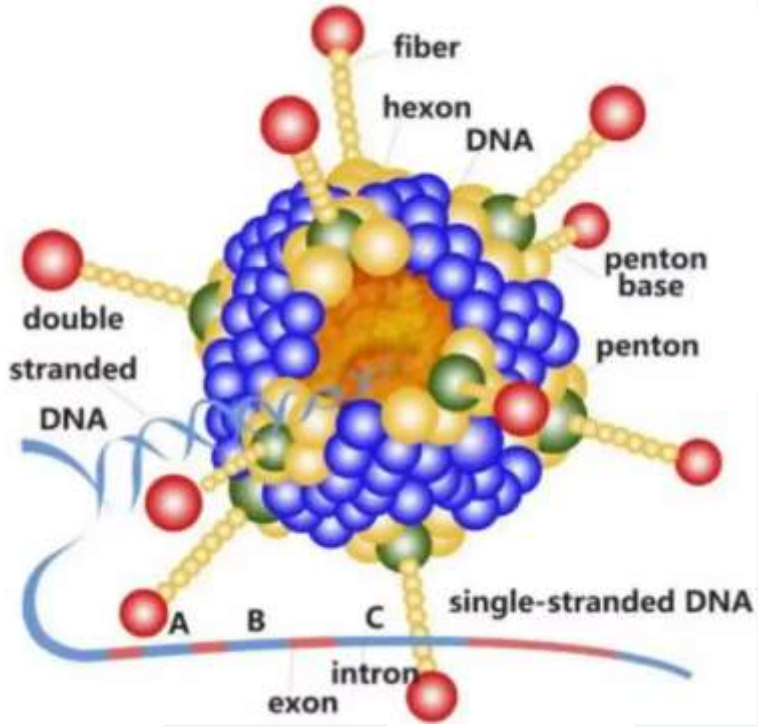
- EDS belong to Group III avian adenoviruses.

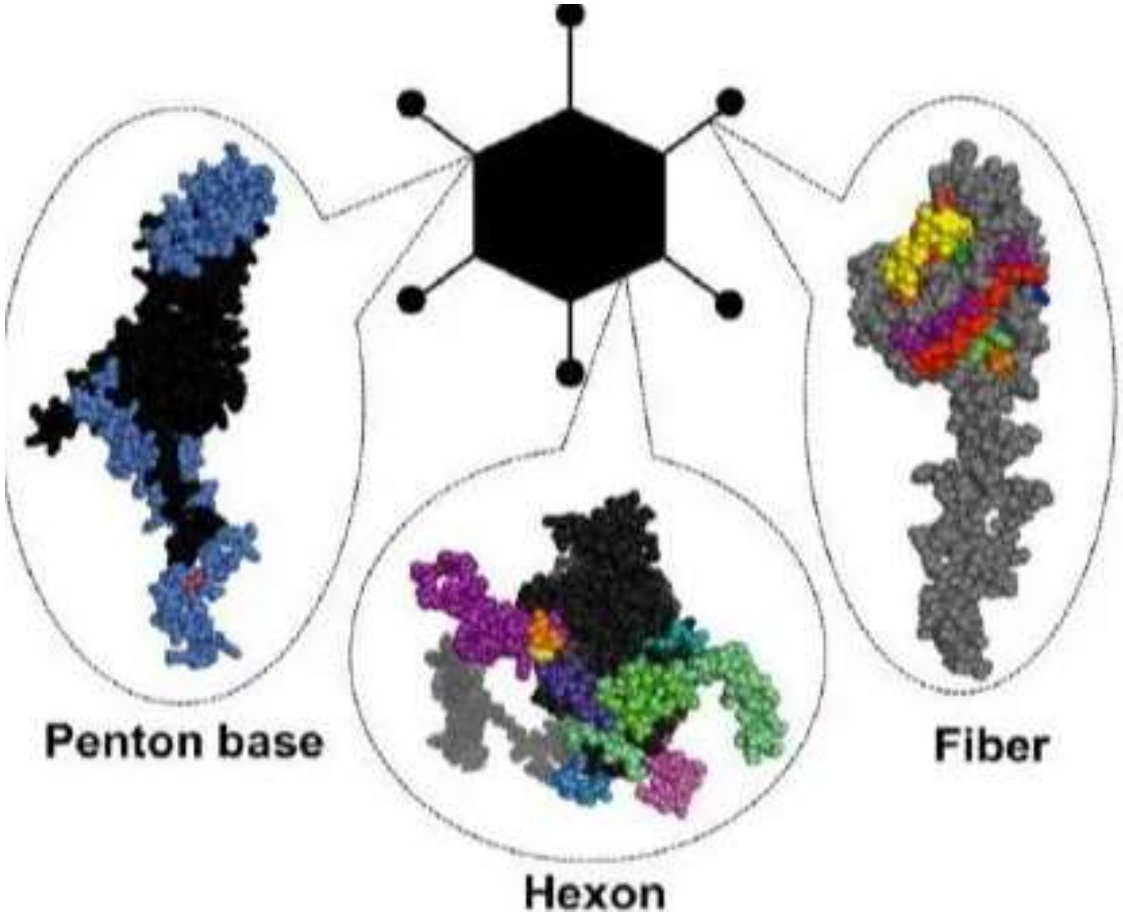
- Currently, this disease has become one of the major diseases causing egg production losses worldwide, resulting in huge economic losses to the poultry industry. This disease can reduce the egg production rate by 10%-30%, with a maximum of 41%, and the egg breakage rate can reach 38%-41%.






Egg Drop Sydrome Virus





Egg Drop Sydrome Virus

VETERINARY MICROBIOLOGY - RESEARCH PAPER

First report on genetic characterization of egg drop syndrome 1976 virus in Egypt

Emad Al-Ebshahy[1] · Mohammed AboElkhair[2] · Awad Shehata[3,4] · Emad Elgendy[5]

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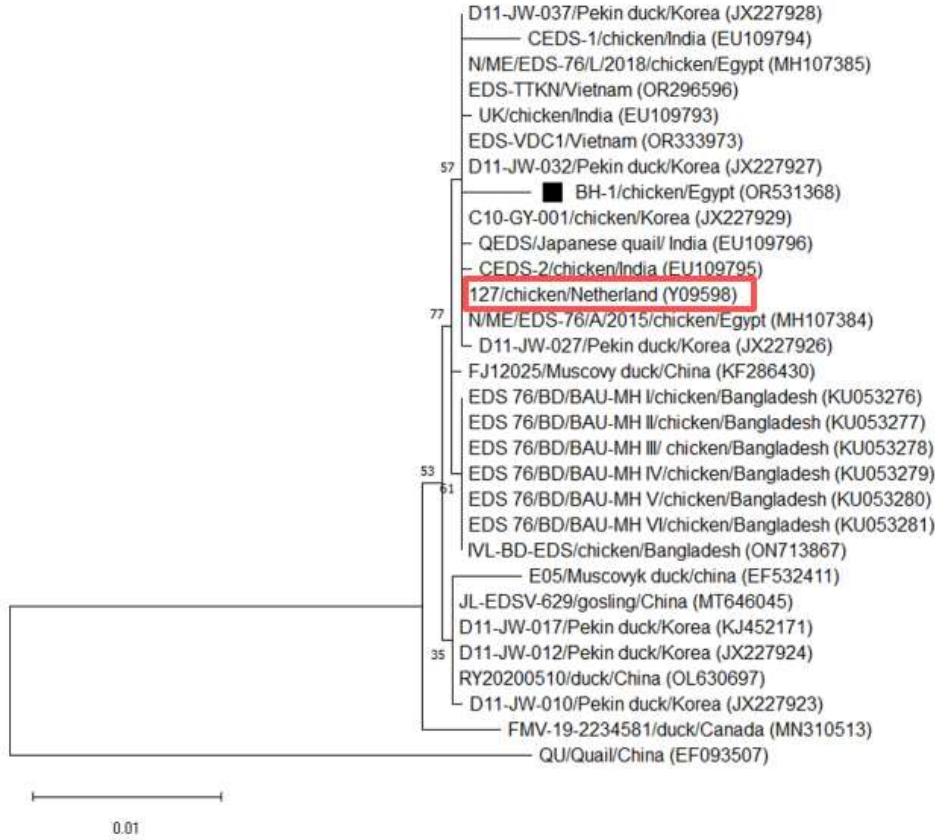
Abstract

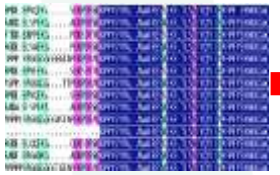
Since its first description in 1991 in Egypt, egg drop syndrome 1976 (EDS-76) virus has received a little attention as a potential cause for the drop in egg production as well as the reduction in egg quality. To date, no studies have been carried out to describe the genetic characteristics of the circulating field EDS-76 virus strains. Thus, the present study was attempted to estimate the emergence of EDS-76 virus in layer flocks and to determine the genetic diversity between the field strains and the vaccine strain 127. During 2022, a total of 5 apparently healthy backyard layer flocks were investigated for the presence of EDS-76 virus infection following complaints of sudden drop in egg production (25–30%), accompanied by high incidence of eggshell defects. EDS-76 virus DNA was detected in the oviduct samples of 4 (80%) flocks by polymerase chain reaction (PCR) assay targeting the hexon gene of the viral capsid. Attempts of viral isolation in duck embryo revealed no embryonic mortality, however, the allantoic fluids of inoculated eggs exhibited a sustained increase in the hemagglutinating (HA) activity throughout three consecutive passages. The obtained strain, designated BH-1, was characterized on the basis of partial hexon gene sequence analysis (GenBank accession number OR531368). The BH-1 strain displayed 99.6% nucleotide identity with the vaccine strain 127. However, amino acid alignments with the vaccine strain 127 revealed that the BH-1 strain carried 5 non-synonymous mutations. In addition, two of these mutations were incorporated into the hexon hypervariable regions (HVRs), which are strictly responsible for eliciting serotype-specific neutralizing antibodies. In conclusion, the present study represents a starting point for genetic characterization of EDS-76 virus in Egypt and highlights the importance for continuous monitoring and characterization of the circulating field EDS-76 virus strains, in order to determine the proper control strategy.



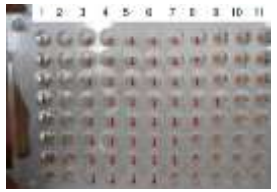
Emad Al-Ebshahy, et al. 2024.

Administration with vaccine is one of the best ways to prevent infectious disease.

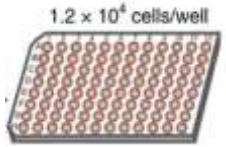
Pylogenetic Tree



Antigenic Site



HI Cross test

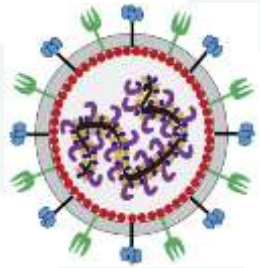


Micro Neutralization

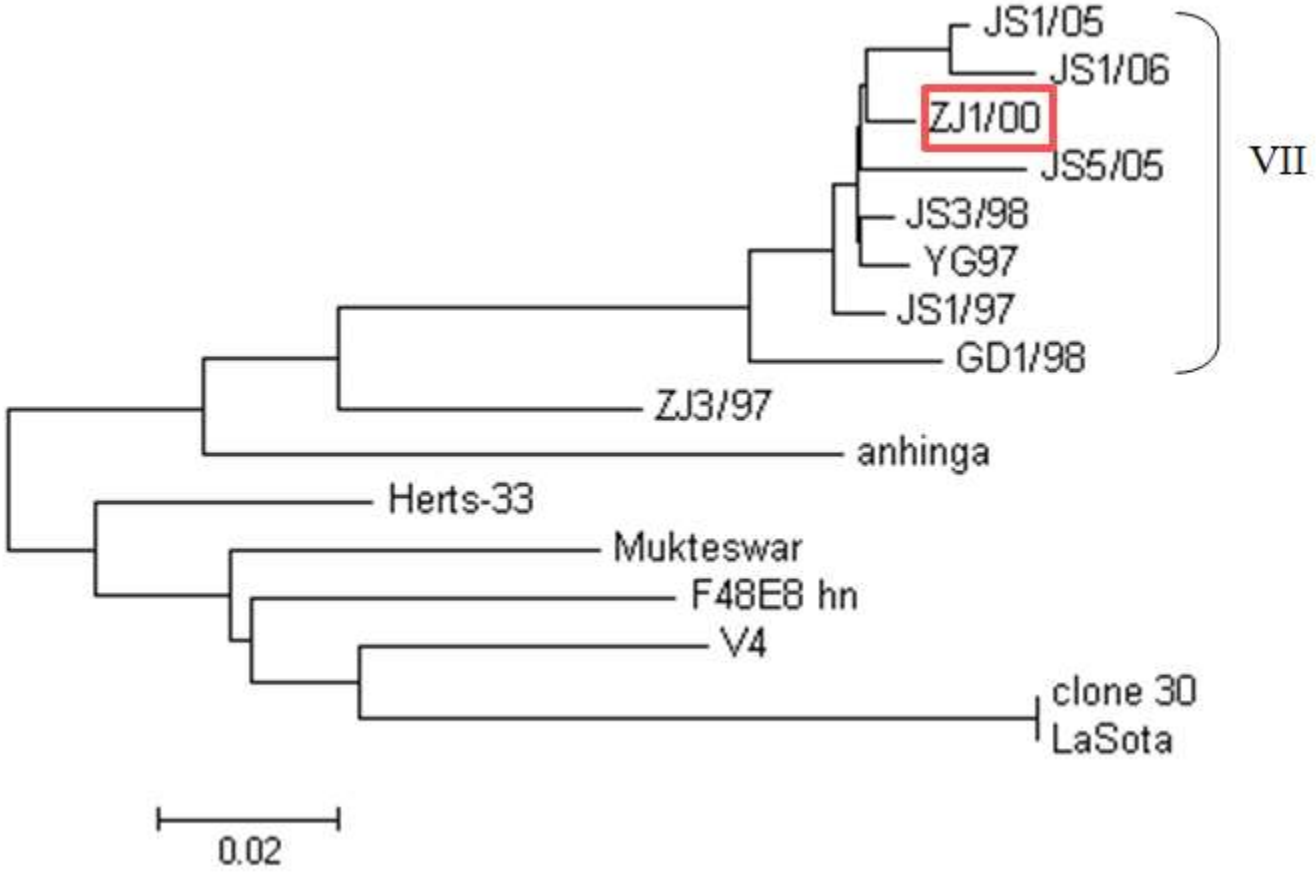
Animal Challenge

02. Introduction of QVAC ND G7 Vaccine

Newcastle Disease parent strain



Velogenic Strain: ZJ1/00
Goose



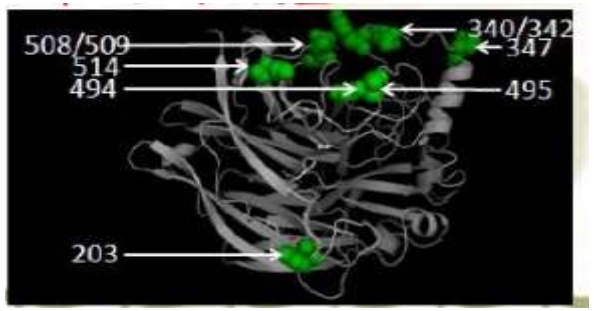
Vaccine parent Strain（ZJ1/00）belongs to genotype VII.

Newcastle Disease

Analysis of amino acid sequence in the antigenetic site of HN protein

Residues	203	340	342	347	494	495	508	509	514	570
V4 (I型)	Y	Y	D	E	G	V	S	T	I	G
LaSota (II型)	Y	Y	D	E	G	V	S	T	I	G
分离株（VIId型）	H	H	N	E/G/K/D	D	E	N	I	V	R

The five antigen（193-201、345-353、513-521、494、569）regions and adjacent amino acids on the HN protein of the epidemic strain are significantly different from those of the Lasota vaccine strain.



Newcastle Disease

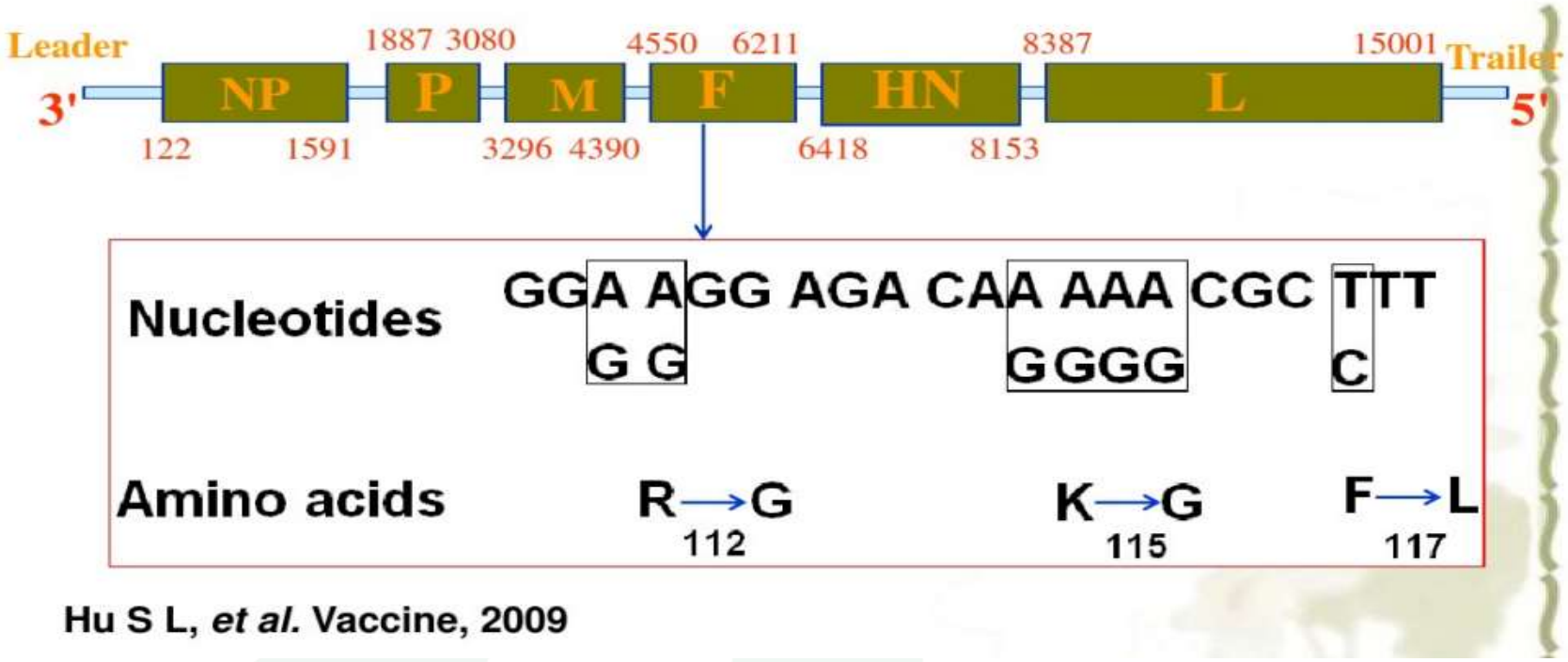
HI test of anti-LaSota serum with partial strains isolated in 2012 （log2）

Serum	Virus strains								
	LaSota	JS-09-12-Ch	JS-03-12-Ch	JS-04-12-Ch	JS-10-12-Ch	JS-11-12-Ch	JS-13-12-Ch	JS-05-12-Ch	ZJ1/00
Anti-LaSota	9	6	7	7	6	6	6	6	6
Anti-NDV/VII	7	9	8	8	9	9	8	9	9

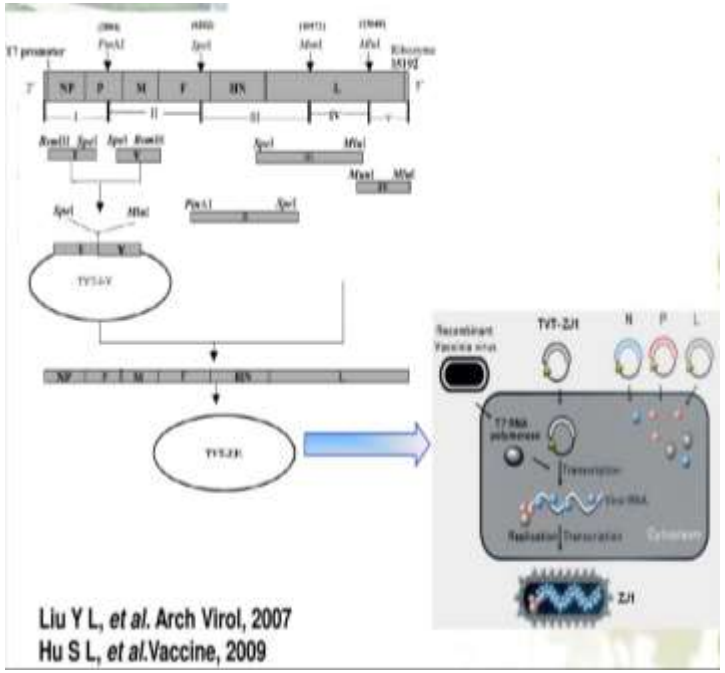
The HI test showed that some of the isolated epidemic strains in recent years have significant antigenic differences with the Lasota strain, and the titer of the Lasota strain's serum and self reaction is 4-8 times higher than that of the epidemic strain.

Newcastle Disease

Generation of A-VII via attenuation



Hu S L, *et al.* Vaccine, 2009



Liu Y L, *et al.* Arch Virol, 2007
Hu S L, *et al.*Vaccine, 2009

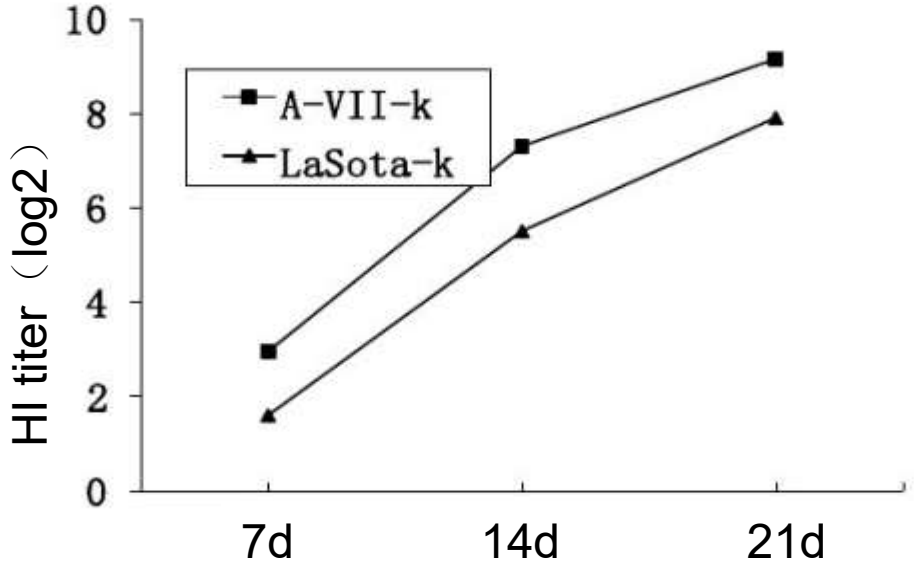
Newcastle Disease

Identification of biological characteristics of A-VII recombinant viruses

Viruses	Pathogenicity		Allantoic fluids titer	
	MDT	ICPI	EID_{50}/0.1ml	HA
E1	>120h	0.3	$10^{8.8}$	10log2
E5	>120h	0.16	$10^{9.17}$	11log2
E10	>120h	0.22	$10^{9.3}$	11log2
E15	>120h	0.17	$10^{8.8}$	10log2

According to ICPI and MDT indicators, the virulence of A-VII strain is lower than that of Lasota strain, and it is safer to use as a vaccine strain. The virus was propagated in chicken embryos, the HA titer of A-VII strain can exceed 10log2.

Newcastle Disease



The efficacy test results showed that the attenuated strain A-VII had strong immunogenicity, and its inactivated vaccine could produce high titers of HI antibodies when immunized with SPF chickens at a lower dose (20ul), and its induction rate of antibody production was faster than LaSota.

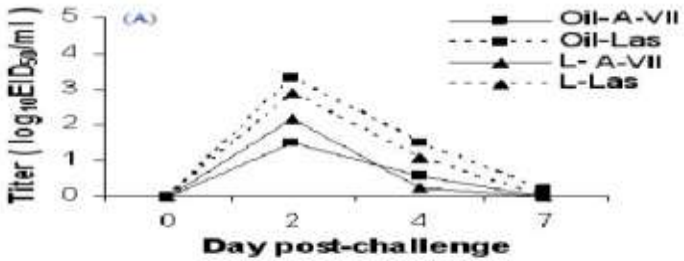
Newcastle Disease

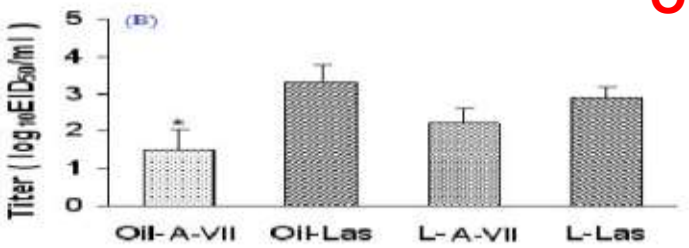
Immune efficacy of NDV/A-VII in chickens

Frequency of isolation of challenge virus in commercial chickens

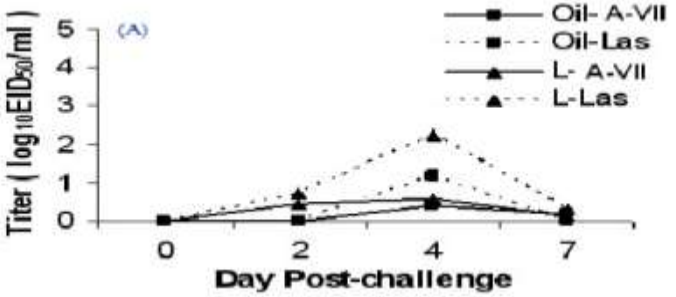
Group[a]	Post-challenge samples (no. positive/total)							
	Day 2		Day 4		Day 7		Day 10	
	O[b]	C[c]	O	C	O	C	O	C
PBS-C	10/10	10/10	10/10	10/10	NS[d]	NS	NS	NS
L-A-VII-C	8/10	3/10	1/10	3/10	0/10	1/10	0/10	0/10
L-Las-C	10/10	3/10	3/10	6/10	0/10	2/10	0/10	0/10
Oil-A-VII-C	5/10*	0/10	2/10	2/10	0/10	1/10	0/10	0/10
Oil-Las-C	9/10	0/10	4/10	4/10	1/10	0/10	0/10	0/10

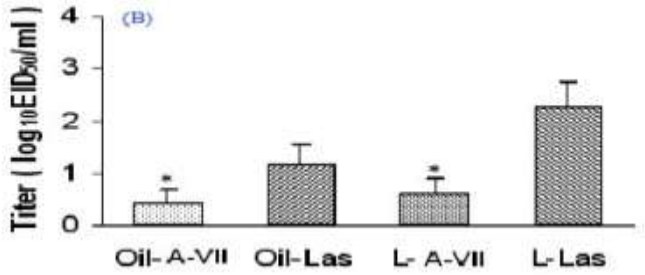
[a] C: challenged with 10^5 ELD50 JS2/06.
[b] O: Oropharyngeal swabs.
[c] C: Cloacal swabs.
[d] NS: no survivors.





Oropharyngeal





Cloacal

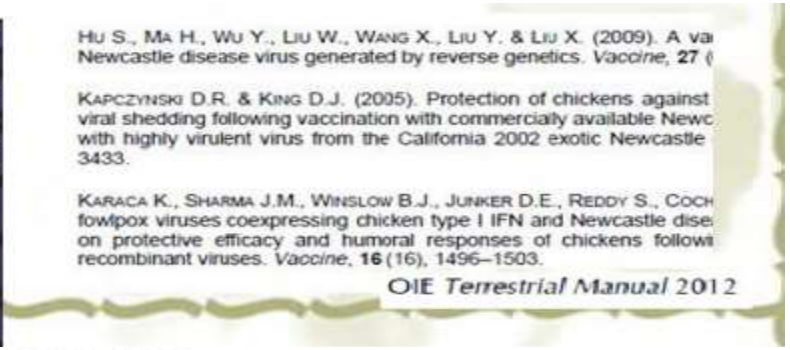
Newcastle Disease

A-VII vaccine strain have excellent characteristics

- A-VII **MDT >120h**, **ICPI <0.3**, its virulence is lower than that of Lasota strain.
- A-VII Virus titer>10^9EID_{50}/0.1ml， HA>10log2.
- The antigenicity of strain A-VII is completely **matched with** the epidemic strain, and its immunogenicity is very strong. It produces **2-3 log2** higher HI antibodies than Lasota, and the antibody increases one week earlier. The virus shedding titer is reduced by **10-100 times** compared to Lasota.


Vaccine

A vaccine candidate of attenuated genotype VII Newcastle disease virus generated by reverse genetics


Hu S., Ma H., Wu Y., Liu W., Wang X., Liu Y. & Liu X. (2009). A va
Newcastle disease virus generated by reverse genetics. *Vaccine*, **27** (

Kapczynski D.R. & King D.J. (2005). Protection of chickens against
viral shedding following vaccination with commercially available Newc
with highly virulent virus from the California 2002 exotic Newcastle
3433.

Karaca K., Sharma J.M., Winslow B.J., Junker D.E., Reddy S., Coch
fowlpox viruses coexpressing chicken type I IFN and Newcastle dise
on protective efficacy and humoral responses of chickens followi
recombinant viruses. *Vaccine*, **16** (16), 1496–1503.

OIE *Terrestrial Manual* 2012

Newcastle Disease

中华人民共和国

新兽药注册证书

证号：（2014）新兽药证字 40 号

新兽药名称：重组新城疫病毒灭活疫苗（A-Ⅶ株）

注册分类：一类

研制单位：扬州大学、中崇信诺生物科技泰州有限公司、青岛易邦生物工程有限公司、扬州优邦生物制药有限公司、江苏南农高科技股份有限公司、哈药集团生物疫苗有限公司、天津瑞普生物技术股份有限公司、乾元浩生物股份有限公司、广东大华农动物保健品股份有限公司

根据《兽药管理条例》，该兽药符合规定，准予注册，特发此证。

发证日期：二〇一四年十一月十七日

The First ND GVII Product in the world!

02.2 Characteristics of QVAC ND G7 Vaccine

99.2% F-protein Homology to Field Strains:
Precision Protection Against Newcastle Disease Evolving

Rapid Antibody Response + Sustained Protection:
Dual-Shield Protection Against Virus

Shedding Interception:
75% reduction of the ND Virus shedding and transmission

NDV A-VII: A Reverse Genetics-Engineered Newcastle Disease Virus Strain with Enhanced Attenuation & High Viral Yield

Developed through targeted modification of envelope glycoprotein genes and cleavage site mutagenesis in the F protein, the NDV A-VII strain achieves:

- High attenuation (ICPI = 0.16; MDT > 120h)
- Superior embryonated egg productivity
- Stable genetic profile

Patent Protected | CN101182494A

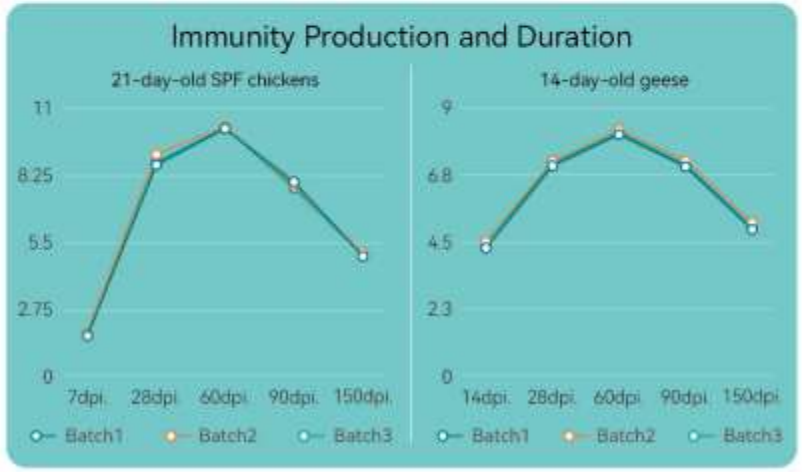
02.2 Characteristics of QVAC ND G7 Vaccine

Precisely engineered with reverse genetics targeting prevalent strains for stronger immunity vs. conventional vaccines (La Sota Strain) .

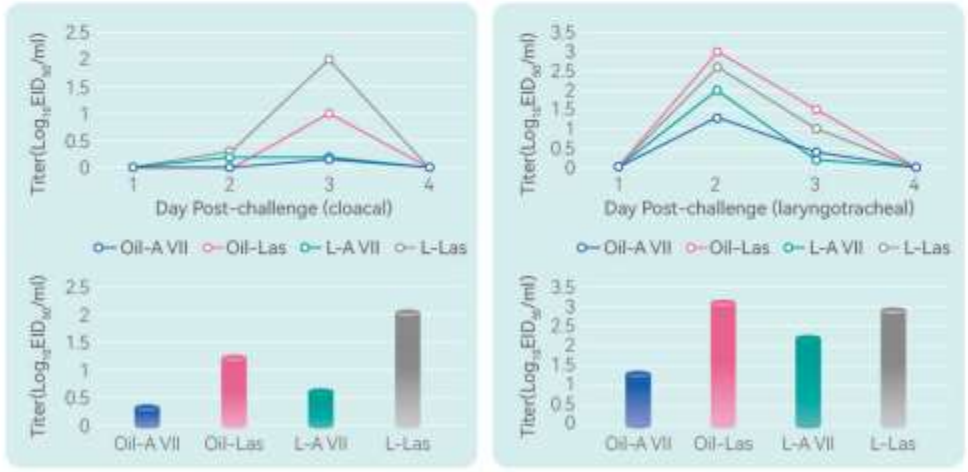
Comparison of ND inactivated vaccine strains

Strain	Genotype	Virulent	Characteristics	Antigen content	Efficacy
A-VII Strain	VIId	Non-pathogenic to chicks	High reproduction capacity High immunogenic	$10^{9.5}EID_{50}$	Effective protection from 14 dpi and lasts for 4 months
La Sota Strain	II	Non-pathogenic to chicks	Medium reproduction capacity Medium immunogenicity	$10^{8.0}EID_{50}$	Effective protection from 21 dpi and lasts for 2 months

Our vaccine can rapidly induce antibodies in chickens and geese, providing long-duration immunity.

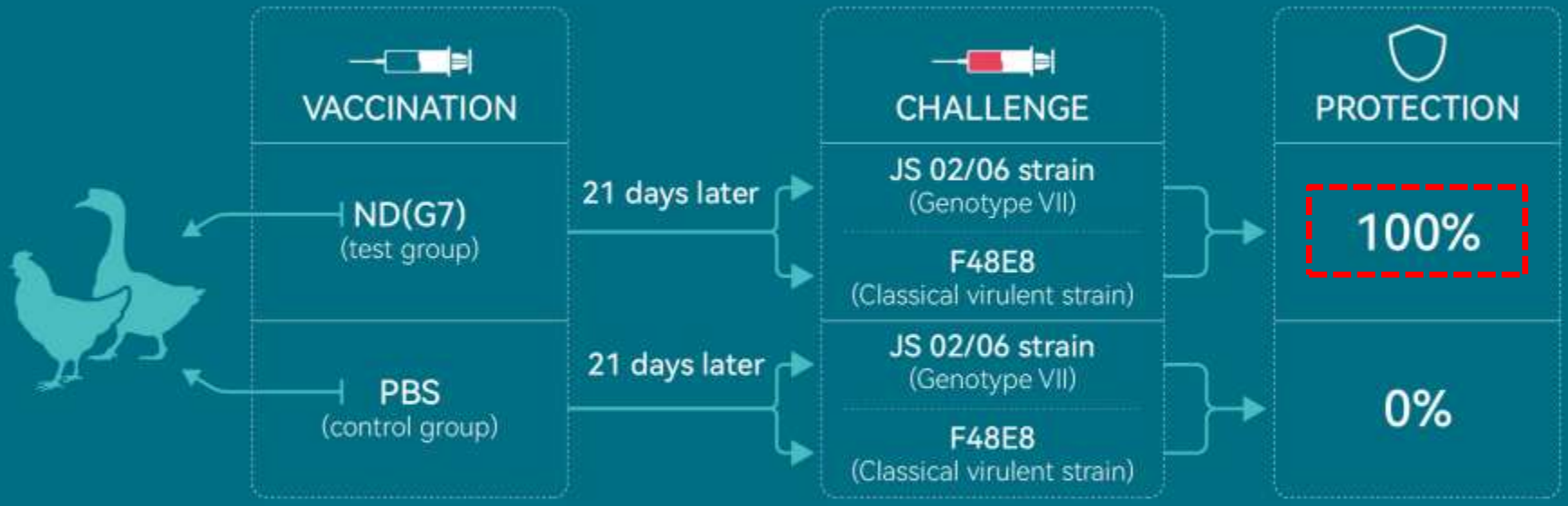


The QVAC ND G7 immunized group demonstrated a 75% lower viral shedding load in cloacal and laryngotracheal samples compared to the La Sota group, as quantified through virological analysis.



02.2 Characteristics of QVAC ND G7 Vaccine

The performance of QVAC ND G7 has been proven in vaccination-challenge tests in chickens and geese. For the test group, the protection rate was 100% after challenging with NDV (prevalent/classic strains)



QVAC ND G7 provides protection to immunized chicken and goose flocks against infection by prevalent virulent strains of Newcastle disease virus, while also demonstrating effective efficacy against classic virulent strains of the disease.

Production Process

STEP 1 Antigen preparation

STEP 2 Antigen inactivation

STEP 3 Emulsify with suitable adjuvant

STEP 4 Filling

STEP 5 Sealing, capping and labeling

02.3 Production of QVAC ND G7 Vaccine

Antigen preparation

Virus Culture

Fully automatic inoculation system

Antigen preparation

Virus Harvest

Tip1 Fully automatic inoculation and harvesting technology

The first manufacturer to master automatic antigen inoculation and harvesting process in China.

Fully automatic inoculation and harvesting machine are introduced from Italy.

Antigen preparation

Virus Purification

Tip2 Antigen high-speed low-temperature centrifugal purification technology

After the antigen was harvested, it was purified with high-speed and low-temperature centrifugation, effectively remove impurities from the antigen.

The antigen recovery rate reached 98%, and the prepared vaccine has got good stability, low viscosity. It will be easy to inject and cause minimal side effects.

High-speed centrifugation

Antigen preparation

Virus Concentration

Tip3 Antigen low-temperature concentration process

Increase the content of antigen;

Ensure the vaccine has good potency;

During the process of antigen concentration, a constant temperature cold water control system is provided to control the whole process at 8 ℃, effectively ensuring the quality of the antigen.

MILLIPORE ultrafiltration concentration system

Antigen Inactivation

Virus Inactivation

Tip4 Fully automatic inactivation system

The temperature is controlled at 37 ℃ during the inactivation process, and the rotational speed is also automatically controlled.

It ensures antigen inactivation completely and avoids the damage of virus immunogenicity caused by temperature changes.

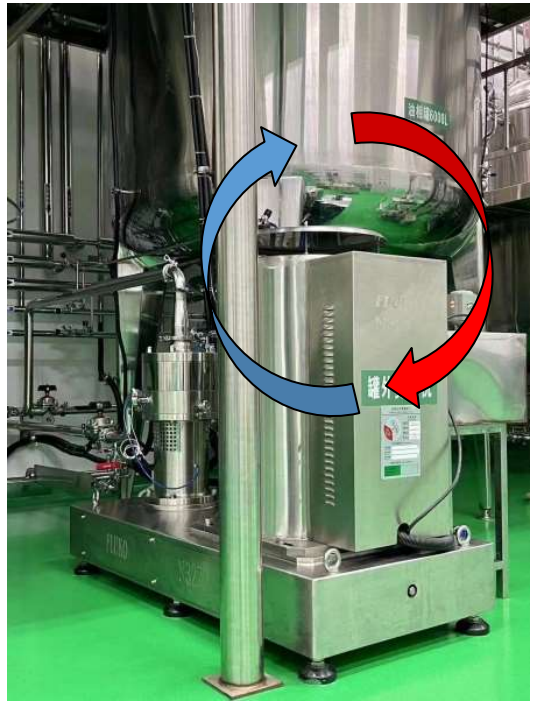
Inactivation Tank

Emulsification

Tip5 Thermostatic emulsification technology

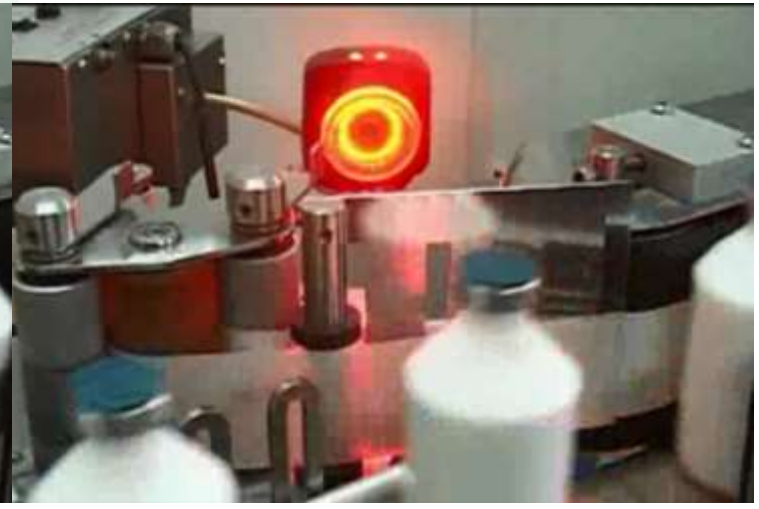
Over a period of 6 years, learned from Merial ST6 emulsification technology, we have developed an specific and advanced emulsification technology in China.

The vaccine will be emulsified for several times at low temperature.



02.3 Production of QVAC ND G7 Vaccine

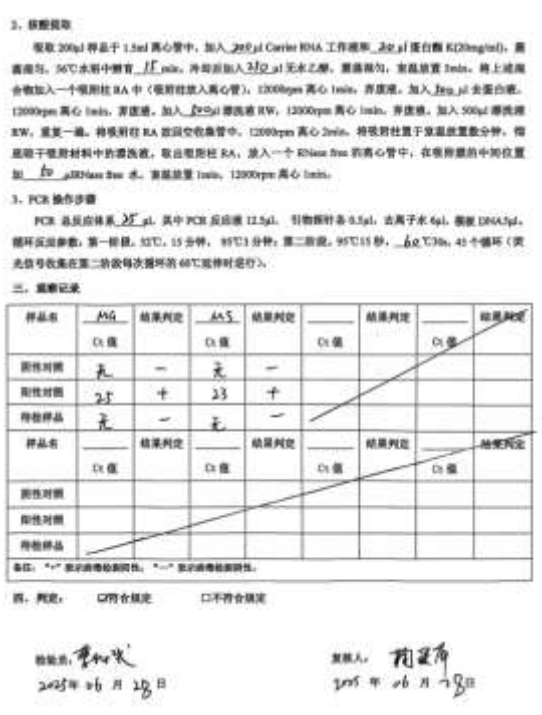
Filling, Capping and Sealing



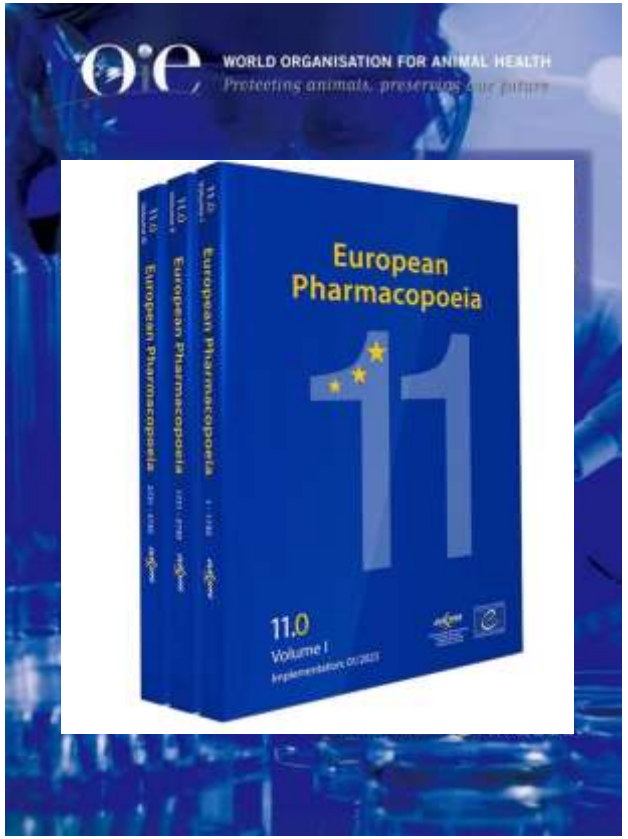
02.3 Production of QVAC ND G7 Vaccine

Strictly Quality Control


荧光定量 PCR 检验记录




乾元浩生物股份有限公司
QYH BIOTECH COMPANY LIMITED
Certificate of Analysis



Free of MS/MG.

No live virus residual in finished product.

Comply with CVP, OIE and EP specification.

02.4 Field Trial of QVAC ND G7 Vaccine

Safety test

Species	Study Description	Key Message
AA Broiler	5-day-old, 2 dose, observe for 21 days.	All the chickens are healthy living without any local or systemic adverse reaction caused by the vaccine. Their body weight increase is well.
Roman Layer	120-day-old, 2 dose, observe for all the laying period.	The egg production is normal. There is no egg production loss caused by the vaccine.

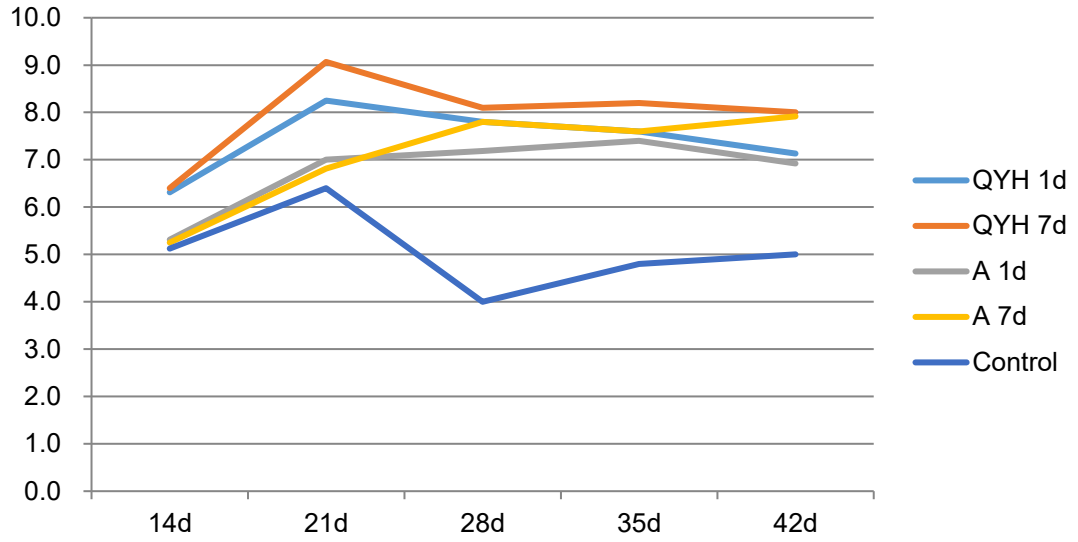
02.4 Field Trial of QVAC ND G7 Vaccine

Potency test（AA Brolier）

Protective Efficacy Studies

Groups of 1-day-old or 7-days-old chickens were vaccinated with 0.15ml or 0.2ml of QYH and Other company inactivated vaccine.

ND	日龄				
	14d	21d	28d	35d	42d
QYH 1d	6.3	8.3	7.8	7.6	7.1
QYH 7d	6.4	9.1	8.1	8.2	8.0
A 1d	5.3	7.0	7.2	7.4	6.9
A 7d	5.3	6.8	7.8	7.6	7.9
Control	5.1	6.4	4.0	4.8	5.0



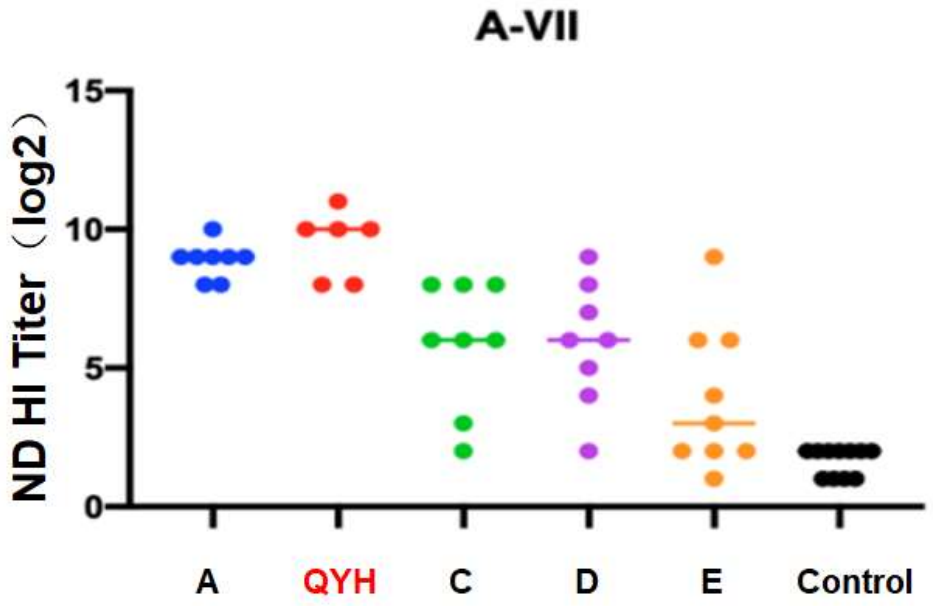
A-VII vaccine can produce antibodies quickly and stimulate a high titers.

02.4 Field Trial of QVAC ND G7 Vaccine

Potency test（AA Brolier）

Protective Efficacy Studies

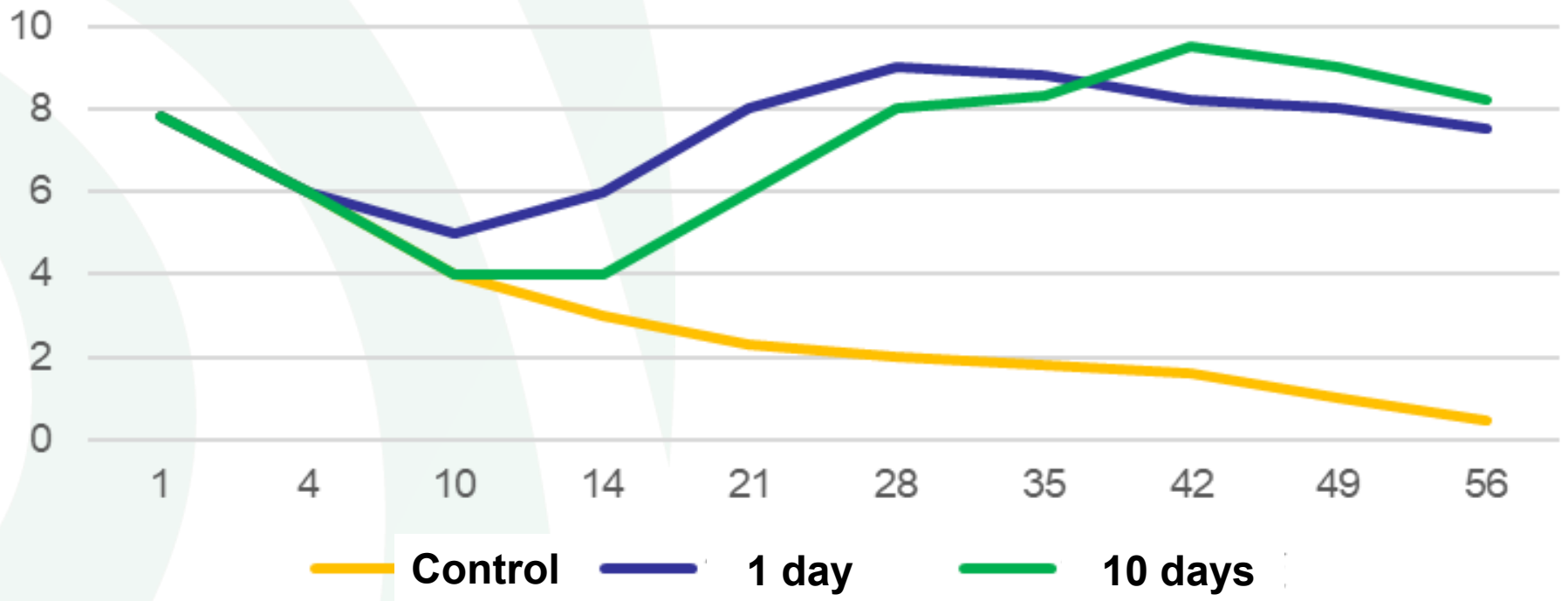
Groups of 6-days-old chickens were vaccinated with 0.25ml of QYH and Other company inactivated vaccine，HI titer were tested after 28days after vaccination.



A-VII vaccine can produce antibodies quickly and stimulate a high titers.

Potency test（Roman layer）

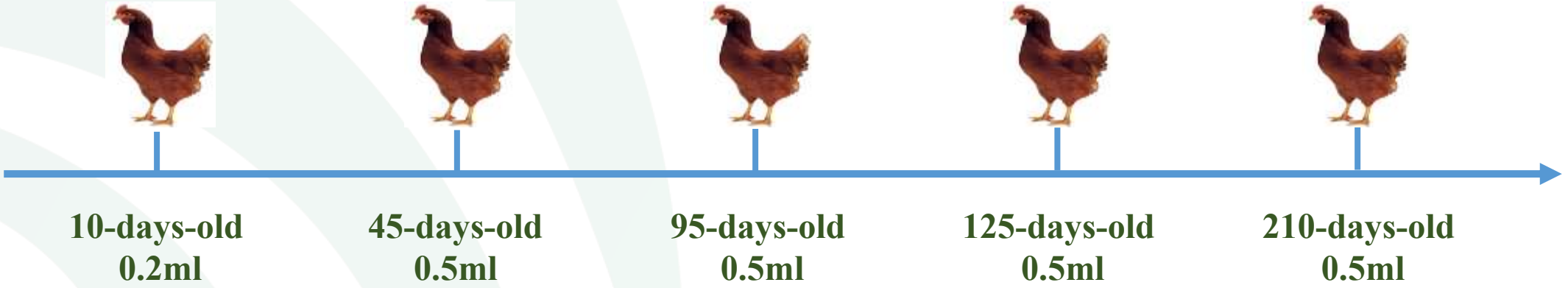
Roman layer ND antibody levels after immunization at different ages



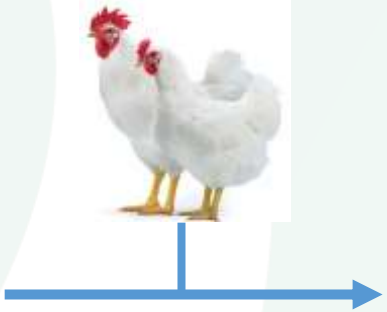
A-VII vaccine can produce antibodies quickly and stimulate a high titers.

02.5 Recommended vaccination program

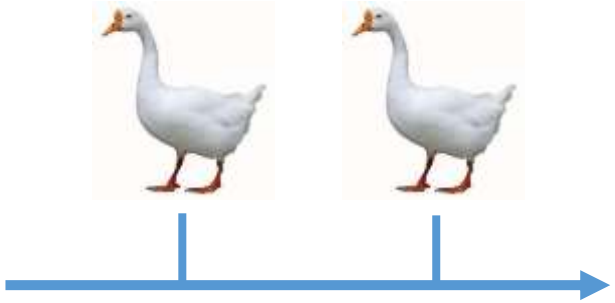
- **For laying hens (0.2-0.5ml/dose, S/C):**



- **For broiler (0.2ml/dose, S/C):**



- **For goose (0.5ml/dose, S/C):**



Brief summary

- NDV genotype VII has become a major dominant genotype in Egypt.
- 99.2% F-protein Homology to field strains which give a good protection.
- Lower impurity protein, higher antigen content ,Mobil white oil adjuvant which can give a lower side effects, better and longer protection.
- Good stability, low viscosity which will be easy to inject and cause minimal side effects.
- Rapid antibody response + Sustained protection: can give dual-shield protetion against virus.
- Shedding Interception: 75% reduction of the ND virus shedding and transmission.
- Best efficacy: Effective protection from 14 dpi and last for 4 months.

This vaccine product was launched in 2015 and has been clinically used for 11 years. We have successfully controlled the prevalence of Newcastle disease, and there have been few outbreaks of Newcastle disease in recent years.

I hope that usage of this product can also quickly control the epidemic and reduce damage to the poultry industry in Egypt.

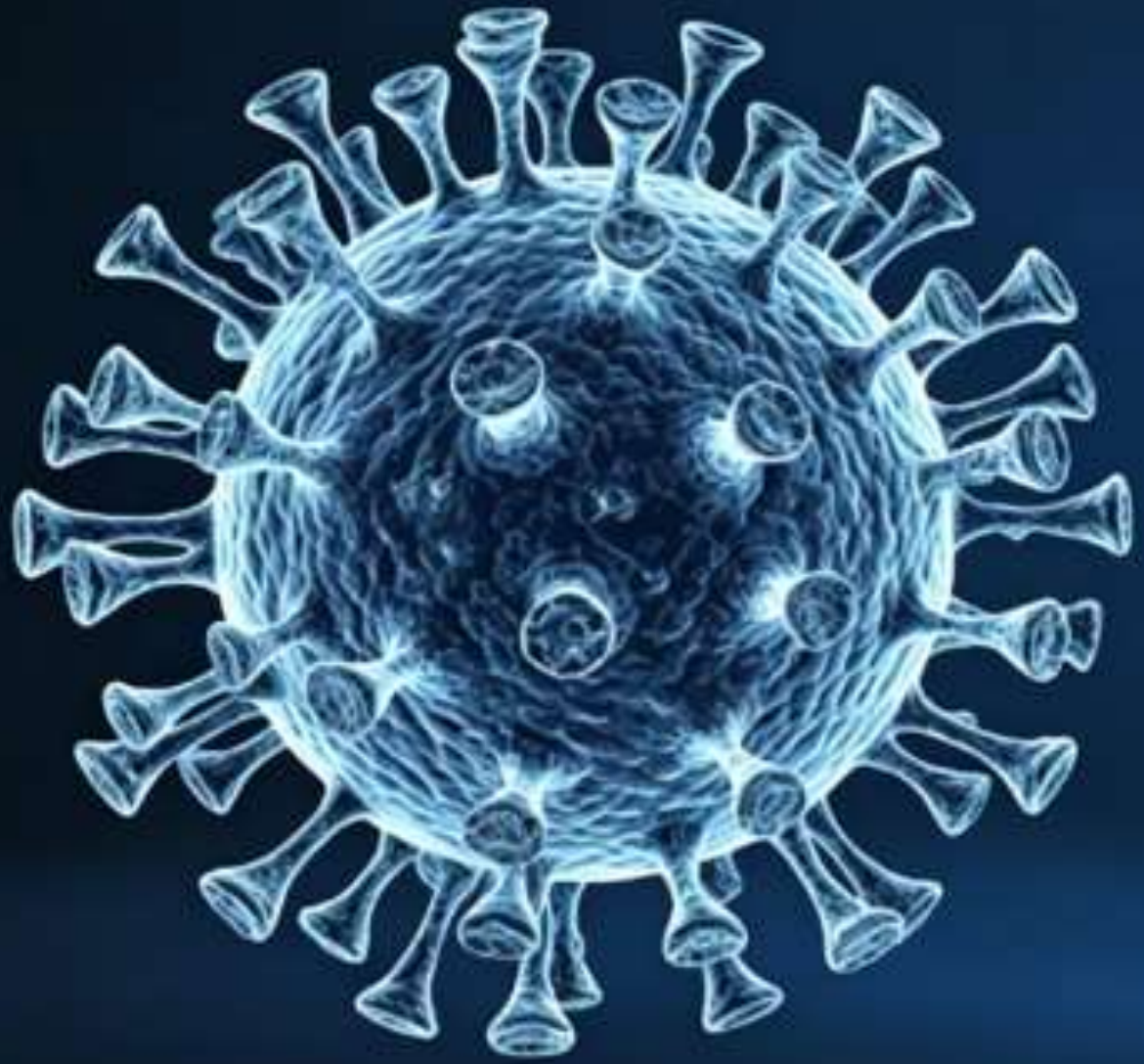
03. Introduction of ND+IB+EDS vaccine

CNADC 中国农发 成员企业

中牧股份 CAHIC

QYH 乾元浩

QVAC ND+IB+EDS

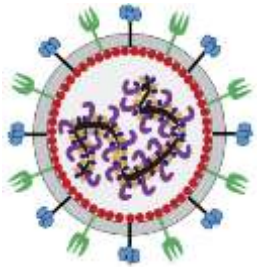


03.1 Characteristics of ND+IB+EDS vaccine

QVAC ND+IB+EDS（Lasota/M41/AV127）

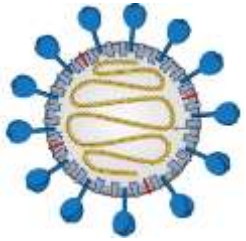
Launched in Egypt in 2017

NDV



Lasota Strain:≥3*10^{8}EID$_{50}$/0.1ml

IBV



M41 Strain:≥3*10^{6}EID$_{50}$/0.1ml

Genotype I

EDSV

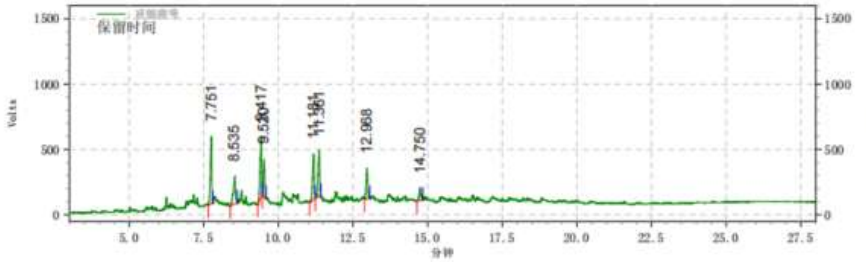
AV127 Strain:HA≥1:30720

Three prevalence virus which can give a broadly protection.

03.1 Characteristics of ND+IB+EDS vaccine

High-speed and low-temperature centrifugation

MILLIPORE ultrafiltration concentration system



后部信号 结果 保留时间	面积	面积百分比	峰高	峰高百分比
7.751	12997850	18.22	3952416	20.47
8.535	8145503	11.42	1618567	8.38
9.417	12954039	18.16	3571456	18.50
9.520	6952603	9.75	2217988	11.49
11.181	9867800	13.83	2651310	13.73
11.361	10638126	14.91	2741099	14.20
12.968	6538853	9.17	1809038	9.37
14.750	3242971	4.55	746534	3.87
总计	71337745	100.00	19308408	100.00

MARCOL-52(C18—C22)

The purified antigen, higher antigen content ,Mobil oil adjuvant which could loss side effects, provide better and longer protection.

03.1 Characteristics of ND+IB+EDS vaccine

Two-step low-temperature emulsification technology to ensure no loss of antigen, uniform vaccine particles, stable dosage form, and fast and uniform induction of antibodies.

Good stability, low viscosity which will be easy to inject and cause minimal side effects.

Safety Studies

Species	Study Description	Key Message
SPF chicken	3~6 weeks old, 2 dose, observe for 14 days.	All the chickens are healthy living without any local or systemic adverse reaction caused by the vaccine
Roman Layer	120-da-old, 2 dose, observe for all the laying period.	The egg production is normal. There is no egg production loss caused by the vaccine.

Efficacy Studies（SPF Chickens）

Batch	Antigen	Antibody Titer										Average	Ratio
		1	2	3	4	5	6	7	8	9	10		
2025021	NDV	7	8	8	8	7	7	8	8	8	7	7.6	
	IBV	3	3	3	2	4	3	3	4	3	2	3.0	26
	IBV	8	8	8	8	7	8	8	7	7	8	7.7	
	EDSV	10	11	11	10	11	10	9	10	10	10	10.2	
2025033	NDV	8	8	8	8	8	7	8	7	8	7	7.7	
	IBV	3	4	3	3	3	2	2	2	3	3	2.8	26
	IBV	7	7	6	8	8	7	8	8	8	8	7.5	
	EDSV	11	10	10	10	11	11	10	10	10	10	10.3	

03.2 Efficacy of ND+IB+EDS Vaccine

Efficacy Studies（Roman layer）

Batch	Antigen	Antibody Titer										Average
		1	2	3	4	5	6	7	8	9	10	
2025025	NDV	12	13	12	11	12	12	12	13	12	13	12.2
	IBV	8	8	8	9	7	8	8	9	7	9	8.1
	EDSV	10	9	9	10	9	10	9	11	9	11	9.7

ND+IB+EDS vaccine can produce antibodies quickly and stimulate a high titers 21 days post vaccination.

Efficacy Studies（layer）

The Efficacy Evaluation of ND+IB+EDS inactivated vaccine produced by QYH company

Dr. Arash Qalyanchi Langerudi

Department of virology, Faculty of Veterinary Medicine, Tehran University

Material

Farm one: LSL chicken (90000 pieces)

1.Blood sampling before vaccination

2.Blood sampling 3 weeks after vaccination

Farm two: Hy-Line chicken (25000 pieces)

1.Blood sampling before vaccination

2.Blood sampling 3 weeks after vaccination

Farm three: Hy-Line chicken (35000 pieces)

1.Blood sampling before vaccination

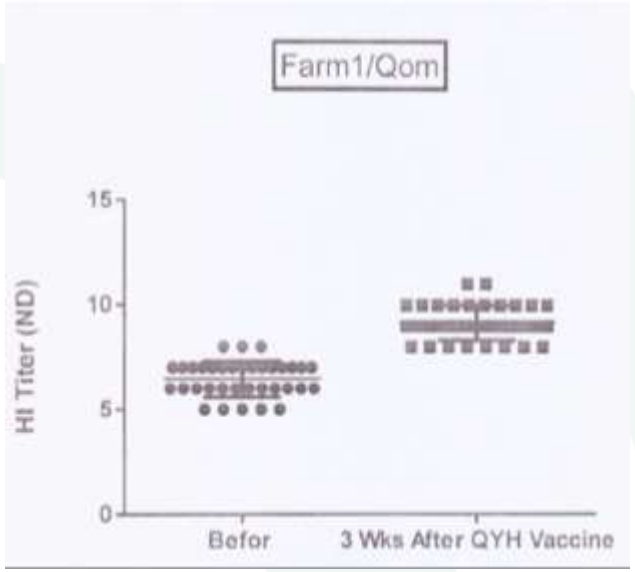
2.Blood sampling 3 weeks after vaccination

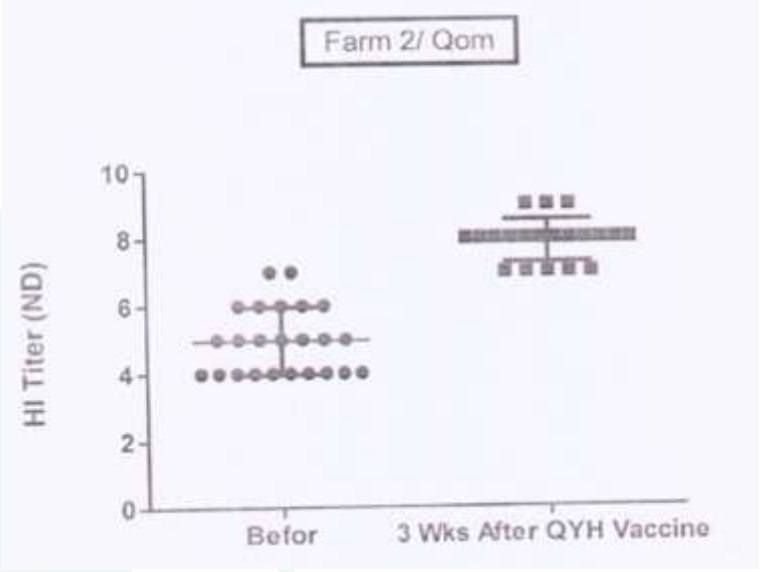
Measuring ND, IB and EDS Titer for each group.

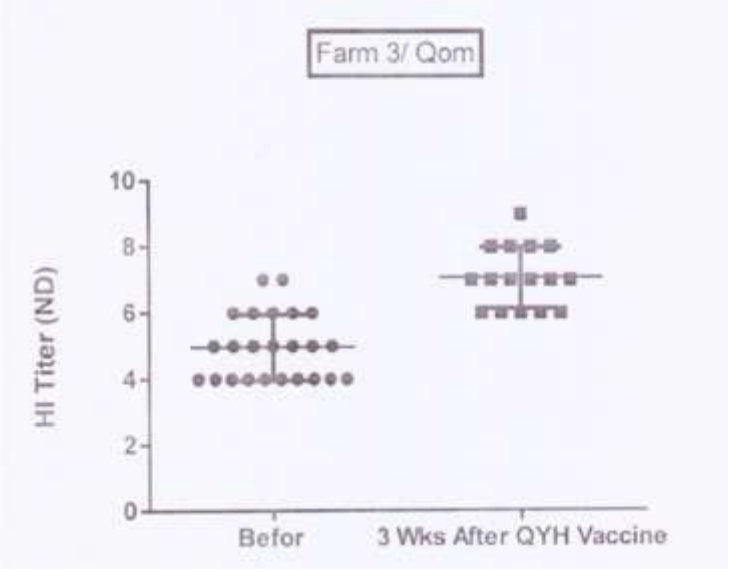
The results are as below:

03.2 Efficacy of ND+IB+EDS Vaccine

Efficacy Studies（layer）



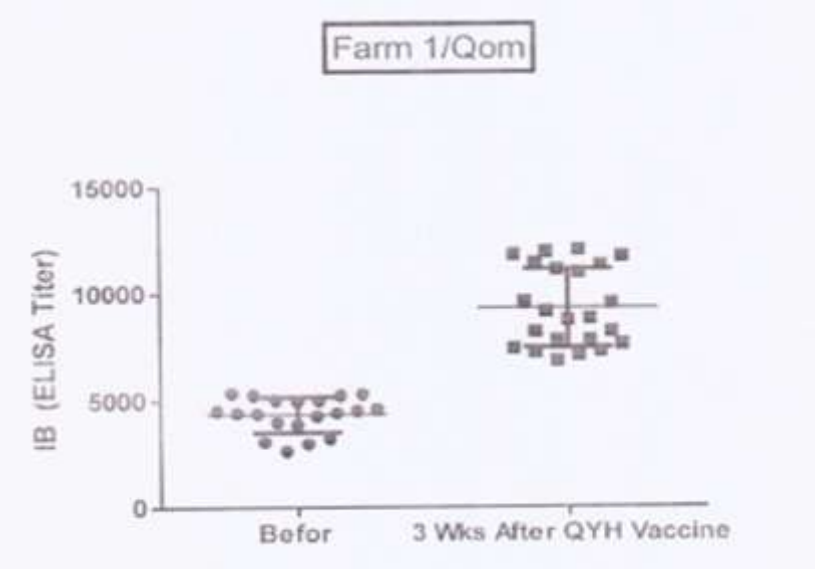


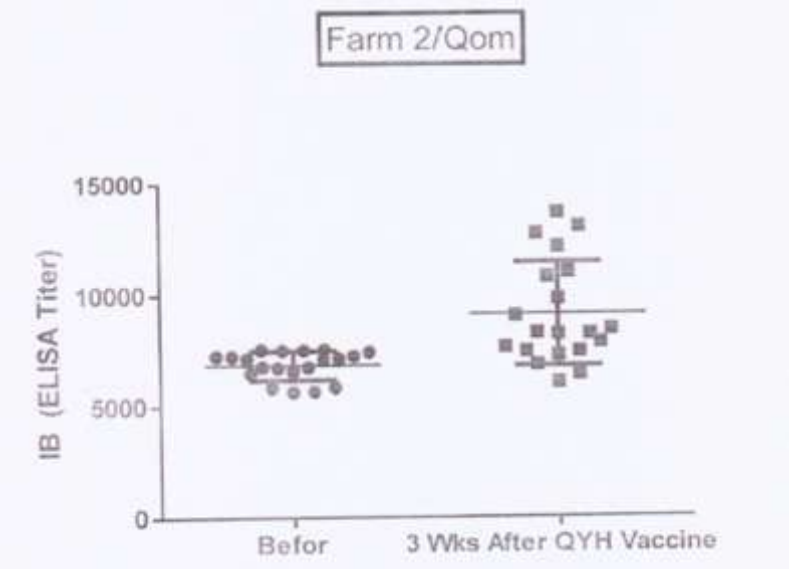


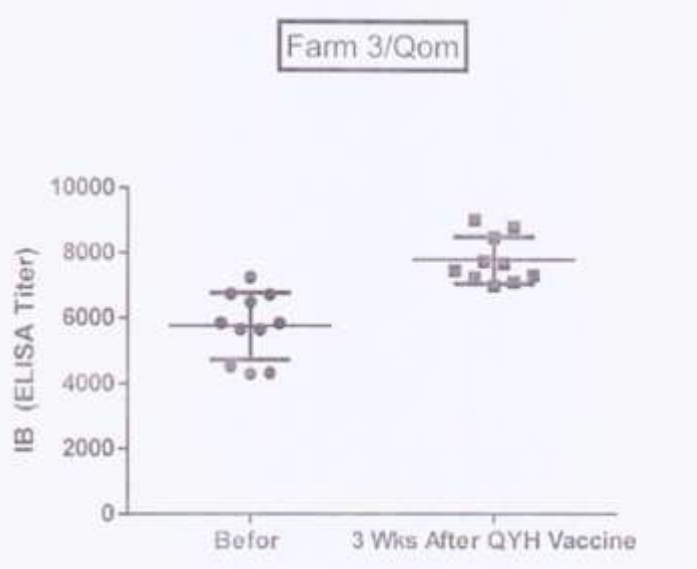
ND+IB+EDS vaccine can produce antibodies quickly and stimulate a high titers 21 days post vaccination.

03.2 Efficacy of ND+IB+EDS Vaccine

Efficacy Studies（layer）



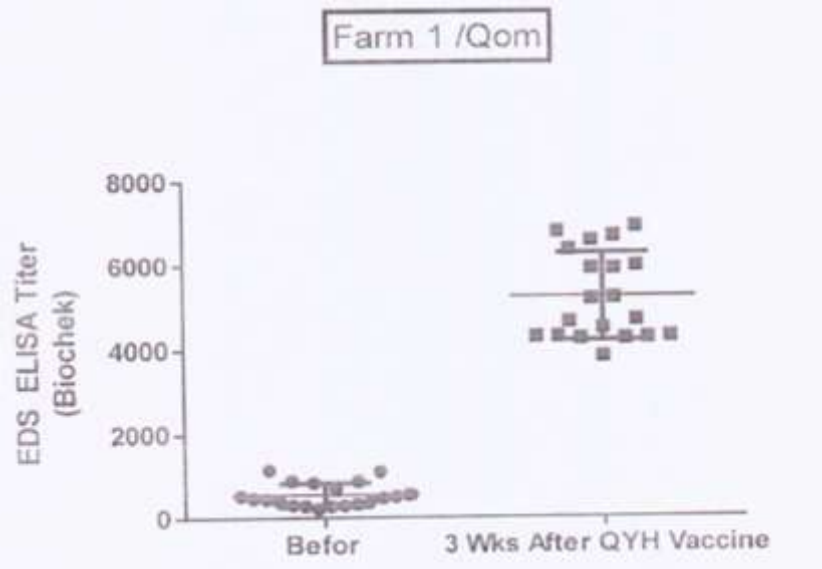


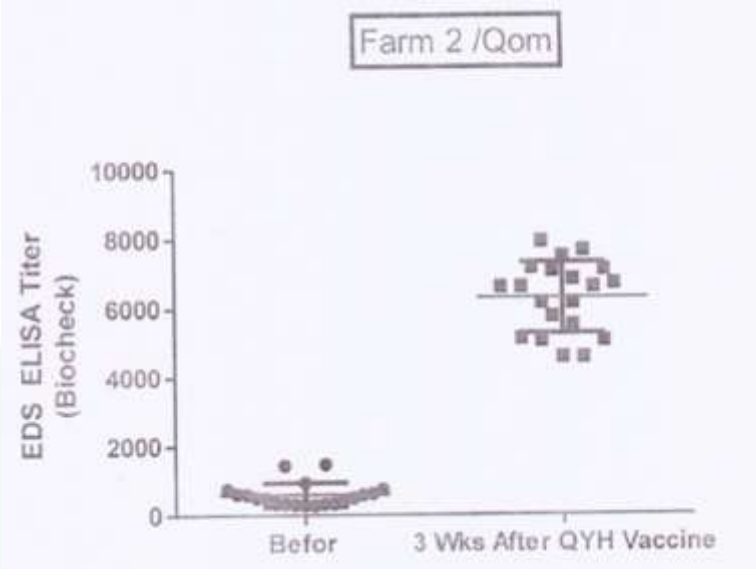


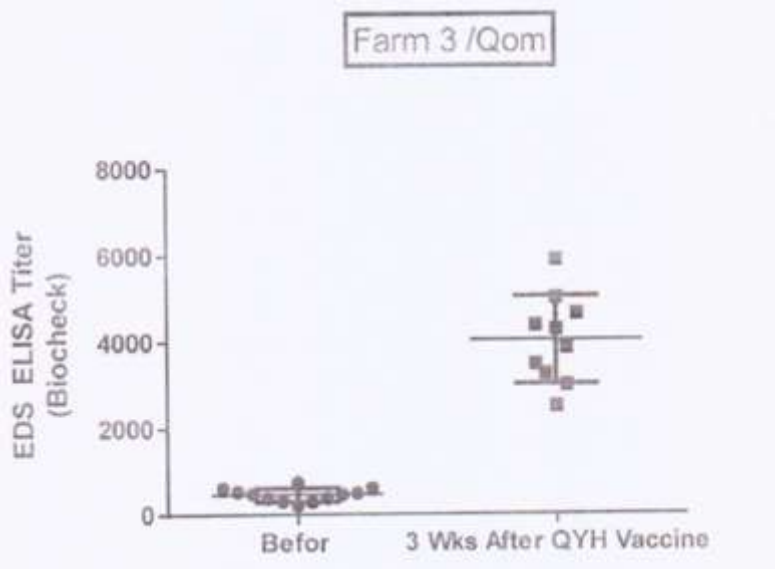
ND+IB+EDS vaccine can produce antibodies quickly and stimulate a high titers 21 days post vaccination.

03.2 Efficacy of ND+IB+EDS Vaccine

Efficacy Studies（layer）

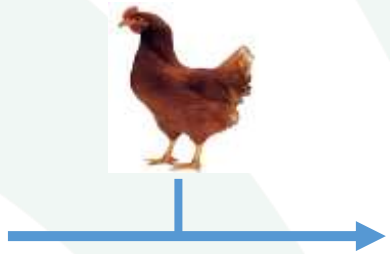






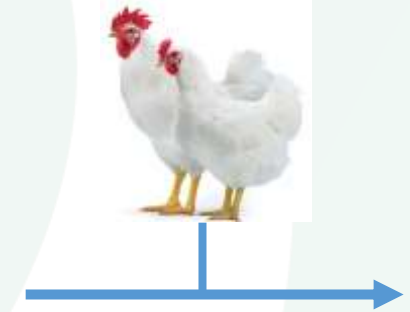
ND+IB+EDS vaccine can produce antibodies quickly and stimulate a high titers 21 days post vaccination.

- **For laying hens (0.5ml/dose, S/C):**



2~4 weeks before egg production
0.5ml

- **For broiler breeder (0.5ml/dose, S/C):**



2~4 weeks before egg production
0.5ml

Brief summary

- Genotypel IB and EDS127 has become a major dominant genotype in Egypt.
- Three prevalence virus in ND+IB+EDS vaccine can give a broadly protection against three avian disease.
- The purified antigen, higher antigen content,Mobil oil adjuvant which could loss side effects, provide better and longer protection.
- Good stability, low viscosity which will be easy to inject and cause minimal side effects.
- ND+IB+EDS vaccine can produce antibodies quickly and stimulate a high titers 21 days post vaccination without any egg production loss.

Contact Information

Thank you for your attention!

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