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List of Abbreviations

AIV	Avian influenza virus
Abs	Antibodies
AF	Allantoic fluid
Ag	Antigen
AGID	Agar gel immunodiffusion test
AGPT	Agar gel precipitation test
Ark	Arkansas variant IBV strain
Bp	Base pair
BLAST	Basic Local Alignment Search Tool
CAV	Chicken anemia virus
CE	Chicken embryo
CEK	Chicken embryo kidney cell culture
CI	Cross immunization studies
CT	Threshold cycle
DNA	Deoxyribonucleic acid
DW	Distilled water
D274	Dutch variant IBV strain
DPC	Days post challenge
E	Envelope protein
ECE	Embryonated chicken eggs
EID50	Embryo infective dose fifty
ELISA	Enzyme linked Immunosorbent assay
EGY	Egypt
H120, H52	Classical IBV strains
HA	Hemagglutination
HI	Hemagglutination inhibition test
IB	Infectious bronchitis
IB 4/91	Variant IBV strain from England
IB primer	Vaccinal strain (H120 + D274)
IBV	Infectious bronchitis virus
ILT	Infectious laryngeotracheitis
LPAI	Low pathogenic avian influenza.
MP	Membrane protein
Min	Minutes
Ma5	Classical IBV vaccinal strain
MDA	Maternally derived antibody
mRNA	Messenger RNA
N	Neucleocapside
NCBI	National center for biotechnology information
NDV	Newcastle disease virus

NRT-PCR	Nested reverse transcriptase polymerase chain reaction
OIE	Office des epizootic international
PBS	Phosphate buffer saline
PCR	Polymerase chain reaction
PI	Post-inoculation
qPCR	Quantitative polymerase chain reaction
QX	Chineese variant IBV strain
RNA	Ribonucleic acid.
RT-PCR	Reverse transcriptase-PCR
RRT-PCR	Real-Time Reverse transcriptase-PCR
Sec	Seconds
S1	Spike 1
SPF	Specific pathogen free
TBE	Tris- Borate EDTA
TCOV	Turkey corona virus
TNF	Tumor necrosis factor
Var	Variant
Vero	African green monkey cells
VNT	Virus neutralization test

English summary

Infectious bronchitis (IB) is a highly contagious viral disease of chicken.It is one of the most economically important viral respiratory disease of chickens beside highly pathogenic avian influenza virus (AIV) andvelogenic Newcastle disease virus. While initially a respiratory disease, the virus also affects the female reproductive tract, causing loss of production and poor egg quality. Some strains have a predilection for the kidney of young chickens, resulting in nephritis that can cause significant mortality.

In Egypt, commercial poultry industry suffered from considerable losses due to the continues emergence of new IBV strains that were able to compromise immunity induced by most available vaccines.

the prevalence of IB in Egyptian chicken broiler farms was studied, examination of 30 chicken farms distributed in 3 governorates (El-Behera, EL- Gharbia and Kafr-Elsheikh) during the period from 2013 to 2015. using Nested RT-PCR revealed that

In the present study samples were taken from kidneys in order to isolate the infectious bronchitis virus by inoculation in 9-11 day old ECE for three successive passages, It showed that the virus causes subcutaneous hemorrhage, curling and dwarfing. Five passages were performed in the present study before the virus-isolation attempt is considered to be negative.

The harvested allantoic fluid used for detection of IBV by Nested RT-PCR and the results revealed identification of 9/30 flocks were positive for IBV (30%).

Two positive isolates were selected (1 and 27) for further genetic analysis by S1 gene sequencing and the phylogenetic analysis revealed

that they are related to the isolated Egyptian strains Eg/12120s/2012-SPI, Eg/12197B/2012-SPI (Variant 2 like strains) by 88% and 86% respectively. Also the analysis showed similarity with the israelian strains IS/885 ranged between 84% and 86% respectively.

In an experiment different IBV vaccines (2 live vaccines H120 and Ma5 and 2 commercially available killed vaccines) were evaluated against two IBV isolates (1 & 27) in commercial chicks. The two challenge IB viruses were in form of allantoic fluid. The assessment of protection was depending on the following approaches: Observation of clinical signs, mortalities and necropsy findings of both kidney and trachea, Detection of the virus shedding using RRT-PCR, kidney function test (Creatinine and Uric acid), Histopathological changes of both kidney and trachea**.**

There were respiratory signs in the vaccinated challenged and experimentally infected non vaccinated control with whitish diarrhea and ruffled feathers.The clinical signs in chickens vaccinated with live IBV vaccines were lower than other groups, there were obvious pathological lesions in kidneys of the vaccinated groups and the control infected group and there was no mortalities in all vaccinated challenged groups.

The three vaccination programs failed to prevent the shedding of the challenge virus in trachea and kidney and were detected in the pooled samples with different rate, also there was high increase in creatinine and uric acid in all vaccinated challenged groups when compared with control negative group.

No vaccine regime used in the current study was able to fully protect vaccinated chickens from the current circulating variant viruses of IBV in Egypt. It is recommended to continue updating the different IB

vaccination protocols and to develop a new vaccines from this variant to help in controlling the disease and to reduce the economic loss in the Egyptian chicken industry.