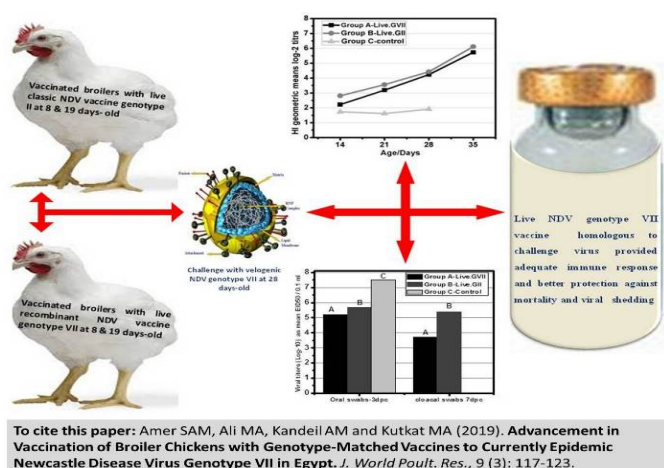


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Volume 9 (3); September 25, 2019 [[Booklet](#)] [[EndNote XML for Agris](#)]



To cite this paper: Amer SAM, Ali MA, Kandeil AM and Kutkat MA (2019). Advancement in Vaccination of Broiler Chickens with Genotype-Matched Vaccines to Currently Epidemic Newcastle Disease Virus Genotype VII in Egypt. *J. World Poult. Res.*, 9 (3): 117-123.

Research Paper

Advancement in Vaccination of Broiler Chickens with Genotype-Matched Vaccines to Currently Epidemic Newcastle Disease Virus Genotype VII in Egypt.

Amer SAM, Ali MA, Kandeil AM and Kutkat MA.

J. World Poult. Res. 9(3): 117-123, 2019; pii: S2322455X1900015-9

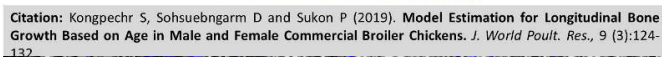
DOI: <https://dx.doi.org/10.36380/jwpr.2019.14>

ABSTRACT:

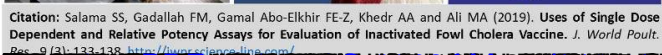
Newcastle disease virus (NDV) outbreaks still occur frequently in Egypt in spite of the heavy implementation of classic NDV vaccines for a long time ago, where NDV genotype VII has become the dominant genotype in Egypt from 2012 until now. Many previous studies have recommended using genotype-matched NDV vaccines against the epidemic virus for providing better protection and minimizing virus shedding. Therefore, the present study evaluated the efficacy of two available live NDV vaccines in Cobb 500 broilers. The group A and B (20 birds each) were vaccinated with live attenuated NDV vaccines genotype VII and II, respectively with double doses at 5 and 19 days of age. Also, group C consisting of 20 unvaccinated birds was studied as a control group. The efficacy of live vaccines was determined using virus challenge test. Hence, all groups were challenged with velogenic NDV genotype VII_d at a dose equivalent to $10^{6.0}$ 50 percent Embryo Infective Dose (EID₅₀) via the intramuscular route at 28 days-old. Serum antibodies level was assessed by hemagglutination inhibition test. Moreover, virus shedding was measured by EID₅₀. The obtained results indicated that vaccinated birds had similar haemagglutination titers with no significant difference prior challenge. Meanwhile, group A showed significant protection against mortality, as well as a significant reduction in virus shedding 7 days post-challenge compared to Group B. We concluded that live recombinant-genotype VII vaccine homologous to challenge virus could improve the protective efficiency in chicken against NDV compared to live classic genotype II vaccine. It is suggested that the implementation of genotype-matched NDV vaccines confer better protection in commercial broilers vaccination programs.

Keywords: Broilers, Genotype-matched vaccine, Genotype VII, Newcastle disease virus

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Results	No of tested batches	Single dose vaccination			Booster dose vaccination				
		Protection	Mean	ELISA Mean	Protection	Mean	ELISA Mean		
								Titer	
				Kit 1			Kit 2	Kit 1	Kit 2
Satisfactory	32	43.7	309	843	76.2	387	1053		
Unsatisfactory	5	29	194	495	50	242	619		



Glutamate dose
30, 40, 50, 60, 70 mM

Nitrogen sources
KNO₃, NH₄NO₃, Urea, Pepton, Yeast ekstrak, Whey tofu, susu kedelai

Whey tofu dose
10, 20, 30, 40, 50, 60, 70, 80, 90, dan 100%

Carbon sources
Glucose, Lactose, Maltose, Sucrose, Palm sugar, Cane sugar

Palm sugar dose
1, 3, 5, 7, 9, 11, 13, 15 %

60 mM glutamate, 100% whey tofu and 15% palm sugar as inducer, nitrogen and carbon sources

Inhibitor factor

Chemical structure of Alginate (Polysaccharide 36):

$$\left[\text{G} \text{---} \text{G} \text{---} \text{M} \text{---} \text{M} \text{---} \text{G} \right]_n$$

Where G = 3,6-dihydroxy-2-hexonic acid, M = 3,6-dihydroxy-2-mannonic acid.

Alginate 35,7

Biological: fermentation with *Bacillus megaterium* 5245

Sargassum binderi

Nutrient content of Sargassum binderi

Crude protein	6.70 %
Crude lipid	10.04 %
Crude fiber	1.76 %
Energy metabolizable	1000 Kcal
Ca	0.73 %
P	0.28 %

(Mubus et al., 2015)

Reductive Compound

Reductive Compound	Function
Alginate	Reduce cholesterol and lipid of meat in broiler (Mahata et al., 2025) Reduce blood serum cholesterol (Suzuki et al., 1997; Ren et al., 1999; Widiastuti, 2001; Astawan, 2005) Increase HDL (Jen et al., 2004; Wang et al., 1999) Reduce level of glucose (Bakari et al., 2003; Ben 2003)
Fucoidin	Reduce cholesterol (Yuan, 2008; Chen and Caza, 2009)
Fucosaric acid	Decrease cholesterol in yolk egg and triglycerides in blood plasma (Al-Harthi and El-Dewik, 2012)
PurA	Decrease cholesterol and increase HDL level in blood (Wahid dan Ibrahim, 2008) Inhibition of fat and cholesterol on egg (Fahriah, 2015)

Effect on Egg Quality:

- Reduction of cholesterol and lipid in egg yolk
- Reduction of cholesterol and lipid in egg white
- Reduction of cholesterol and lipid in egg shell
- Reduction of cholesterol and lipid in egg membrane
- Reduction of cholesterol and lipid in egg albumen
- Reduction of cholesterol and lipid in egg yolk
- Reduction of cholesterol and lipid in egg white
- Reduction of cholesterol and lipid in egg shell
- Reduction of cholesterol and lipid in egg membrane
- Reduction of cholesterol and lipid in egg albumen

