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Efficacy of bivalent Baculovirus-expressed H5+ND inactivated vaccine against single and dual infection with Avian Influenza H5N1 and velogenic Newcastle disease virus in broiler commercial chickens

Thesis Submitted

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Dedication

Dedicated to:

Soul of Prof Doctor/ Ismail Reda

Father

Mother

Brothers

Wife

My son Mazen

And

My young daughter

jody

I hope that they will be happy, with my deep thanks for their support during the work.

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Abstract:

This study aimed to evaluate the bivalent vaccine (recH5/NDV-Vaccine) for both Avian Influenza and Newcastle viruses. One hundred and eighty commercial Hubbard chicks were divided into nine groups, (20 each). Forty birds that vaccinated at 5^{th} day of age by recH5/NDV-Vaccine (0.5ml per dose via subcutaneous route) were divided into 2 groups. In addition to eighty birds were vaccinated at 10days old with the same vaccine and route then subdivided into 4 groups. The rest birds were divided into 3 groups which kept none vaccinated as control groups. Birds were challenged either single and / or dual (with 3 days interval) at 21 day post vaccination with 10^6 EID_{50} dose by either the highly pathogenic avian influenza H5N1 Egyptian virus of clade 2.2.1.2/2015(HPAI-H5N1-CV) or velogenic NDV isolate of genotype VII (eNDV-GTVII) of Egyptian origin 100 ul per bird via the intra-nasal route. The results showed that the protection % for all groups vaccinated at 10 days old were 100 % expect one group which challenged with HPAI-H5N1-CV then eNDV-GTVII (90%), while groups vaccinated at 5day were 80% and 70%. Estimation of shedding % for both viruses showed that all groups not exceeded 30% shedding and extended for 5day post challenge (dpc) only but the quantity of virus shed in case of 5 day vaccinated groups were more than groups vaccinated at 10days old. When Re-isolation of the challenged viruses inoculated in Embryonated Chicken Egg (ECE) indicated that no virus shedding after 1^{st} passage in case of groups vaccinated at 10days old. However, 5 day vaccinated groups were shed virus at percentage 20% &10% for H5 and only 10% for NDV. Generally, the antibody titer & histopathological scoring in groups vaccinated at 10days old were much better than 5 day vaccinated groups. Indeed, we do our recommend to use the vaccine at 10^{th} day of age.

Keywords: Inactivated vaccine, recH5/NDV, dual infection, highly pathogenic avian influenza H5N1, clade 2.2.1.2, velogenic Newcastle disease virus, genotype VII, chickens, Egypt.

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