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Effect of antigenic mass and MDA on the efficacy of H5 inactivated avian influenza vaccine in commercial broiler chicken

A Thesis presented

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Abstract

In the current study two experiments were concluded. The first experiment was performed on 300 HAU vaccines (group 1, 2, 3 for local prepared, 4, 5, 6 for imported) while, the second one using 500HAU vaccines. Each experiment compare the effect of vaccination age (1, 5, 10 days) which reflects the effect of maternal derived antibodies on the vaccination. Challenge test revealed 0, 13, 80 % and 0, 13 and 86 % of protection in groups 1,2,3 and groups 4, 5, and 6; respectively. rRT-PCR and virus isolation revealed that vaccination at 1 and 5 days of age demonstrated 100% shedding at 3, 5, 7 and 10 days post challenge. However, groups 3 and 6 which were vaccinated at 10 days of age revealed difference in shedding pattern where group 3 (local prepared 300HAUvaccine) showed 100 shedding by rRT-PCR and 100%, 60% and 60 % of the chickens in tracheal swabs and 100%, 80% and 60% in cloacal swabs when tested by virus isolation in eggs at 3, 5, 7 and 10 days post challenge; respectively.

The second one applied to understand the differences in antigenic mass in H5 inactivated vaccine and it is greatly related to the reduction of virus shedding. HI significantly differ in relation of age of vaccination where the groups vaccinated at 10 days of age were significantly higher compared to others with maximum titers at 4 weeks post vaccination. The protection % revealed 0, 20, 86 % and 0, 20 and 86 % in groups 1, 2, 3 and groups 4, 5, and 6; respectively. Results of rRT-PCR and virus isolation revealed that all chicken groups vaccinated at 1 and 5 days of age revealed 100% shedding at 3rd,5th,7th and 10th days post challenge. However, groups 3 and 6 which were vaccinated at 10 days of age demonstrated different shedding pattern where group 3 (local prepared 500HAU vaccine) showed at the 3rd and 5th days shedding by rRT-PCR and 80% and 20 % of the chickens in tracheal swabs and 80% and 40% in cloacal swabs when tested by virus isolation in eggs at 3 and 5 days post challenge; respectively. Whereas swabs of 7 and 10 days post challenge of group 3 were negative by rRT-PCR and virus isolation. In the other hand, group 6 (imported 500HAU vaccine) demonstrated shedding % at 3 and 5 days post challenge by rRT-PCR and for virus isolation were positive in 60% for tracheal swabs 3 day post challenge and no shedding at 5th post challenge and 60% and 20% for cloacal swabs; respectively. At 7th and10th days post challenge shedding of all chickens in group 6 were negative by both rRT-PCR and virus isolation. The study highlights the importance of both time of vaccination and antigenic content of the inactivated H5 vaccines.

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DEDICATION

My Dear Father and Mother

My Dear husband Essam

My Dear Father-in-law and Mother-in-law

My Kids Mazen, Malak and Mariam

My sister

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