Antibody Responses to Avian Influenza Vaccination in Broiler Chickens in Indonesia

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Introduction

Avian Influenza (AI) is a highly infectious viral disease of poultry that continues to inflict severe economic damage to the poultry industry, particularly in countries in South East Asia. The objective of this study was to determine antibody titres after vaccination of broilers in the face of maternal antibodies.

Material & Methods

Study Design: A total of 1500 Cobb broiler chickens were divided at random into 5 groups of 300 chickens. Group 1 was vaccinated against AI on day 1, group 2 on day 7, group 3 on day 10, and group 4 on day 14 of age. Group 5 was a control group and was not vaccinated against AI. Blood was collected on day 1, 7, 14, 21, 28, 35, 42, and 49 of age.

Vaccination: The AI vaccine used in this study was locally produced H5N1 (A/ch/Legok/03. AI killed oil emulsion vaccine.

Sample Type and Collection: The types of samples collected in this study were blood samples, tracheal swabs, and cloacal swabs.

Sample Testing: Serum samples were tested for H5 antibodies using the haemagglutination inhibition (HI) test. Tracheal and cloacal swab samples were tested using an H5 Reverse Transcription Polymerase Chain Reaction (rt-PCR). All AI related tests were conducted at Balai Penyidikan Penyakit Hewan dan Kesmavet, Cikole-Lembang.

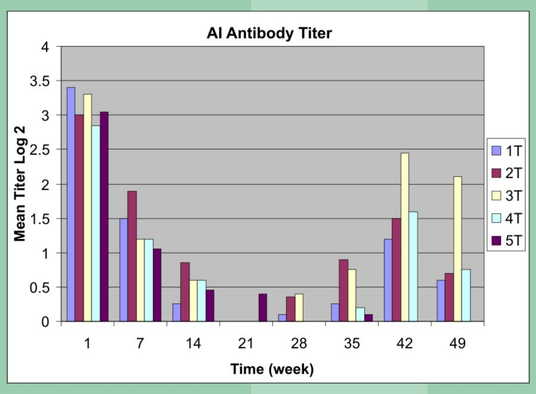
Table 1 Study Design

Treat	Day of Vaccination & Treatment								
	1	7	10	14	21	28	35	42	49
1T	√√	√	-	√	√	√	√	√	√
2T	√	√√	-	√	√	√	√	√	√
3T	√	√	√	√	√	√	√	√	√
4T	√	√	-	√√	√	√	√	√	√
5T	√	√	-	√	√	√	√	√	√

√ Blood sample
√ AI vaccination
√√ Blood sample & AI vaccination

Result & Discussion

Figure 1 Weekly AI Antibody Titers (GMT) in five groups of broiler chickens



Highest mean antibody titers were found in group 3 but was not significantly different from others. Low antibody titers in vaccinated birds could result from poor vaccine quality, unsuitable vaccination schedules, improper vaccine administration, impaired immune-competence, or low capacity of the innate immune system of broiler chickens. The results of this study demonstrate that broiler flocks remain potential risk factors for the spread of the disease due to the difficulties encountered in achieving sufficient protective coverage after vaccination.

Conclusions

One-time vaccination of broiler chickens on day 1, 7, 10 or 14 with an inactivated H5N1 vaccine did not result in mean levels of antibody titers which are considered to be protective.

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