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PROTECTION RATE OF COMMERCIAL CHICKEN AFTER VACCINATION AND CHALLENGED WITH GUMBORO (INFECTIOUS BURSAL DISEASE)

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Introduction

Classical Gumboro disease caused by Infectious bursal disease virus (IBDV) in Indonesia was reported by Akiba *et al* in 1976 but more serious form of IBD braked through at the end of the 1991 and caused high mortality in nearly all commercial farms. Actually it has recently become a more serious problem in South-east Asia countries (Teng 1992). Vaccination program of IBD is only regularly done by breeding farms while commercial farms did irregularly caused by some reasons i.e the vaccine is relatively expensive and the farmers were not familiar yet with IBD cases. The more serious form of IBD is called virulent IBD with a short incubation period and the clinical signs were a sudden, sharp rise and fall in the number of deaths, with a peak on the third or fourth day, and rapid flock recovery. Mortality rate can be achieved to 50% in young chickens and in some cases, the vaccination was not able to control the disease.

The present study was conducted to find out the vaccination scheme for IBD and efficacy in layer. Various of age when the vaccine was administered and simulated natural challenge was carried in 2 weeks interval observation. The parameters of protection rate and immune titre were evaluated and discussed.

Materials and methods

IBD vaccines. One dose of commercial vaccine as recommended from the Company or $10^{6.5}$ TCID₅₀ of IBDV#5 was administered by eye-drop for vaccination.

Challenge virus. A virulent local isolate of IBDV was used for challenging the chicken by simulated natural infection. A group of chicken were infected with virulent IBD virus ($10^{4.5}$ TCID₅₀) by eye-cloacal drop and the next day two infected chicken were placed in each experimental group.

Experimental chicken. Commercial day old layer chicks were reared and divided into 4 groups. Vaccination for ND was given at 4 and 14 days of age. The schedule of vaccination against IBD, challenged, observation and termination of trial was presented in Table 1. The observation were carried out for period of two weeks after challenged.

Serological test. The sera were taken before one day prior vaccination, before challenged and when terminated respectively. Capture-Ab Elisa test from TropBio product (Australia) was used for measuring Ab level against Gumboro.

Results and Discussion

The results showed that protection rate was varied in all groups (Table. 1). Vaccination only on time showed nearly similar to the control group as the maternal Ab was adequate high to protect the chicken. However, the protection was low when the challenged was carried out at 4 weeks after vaccination (Group IX). Possibility of the mild strain (#5) cannot break through the maternal Ab until the level was low at 28 days old (Group IV) as no vaccination group show 50% similar protection to IBDV #5, while the commercial vaccine (Erp) protected up to 100% (Group III) and 90% (Group IV, V and VI) as (Group IV, V and VI) as the Ab level was increase.

Recent IBD outbreaks in South east Asia included Indonesia (Teng 1992) was reported and indicated the present of pathogenic shift or antigenic shift or mutation of IBDV from the classical form to the acute pathogenic like in earlier reports (Snyder 1989; Berg 1991; Nunayo et al. (1992)). In Japan, the conventional vaccines gave a satisfactory protection against challenge with pathogenic shift virus from field isolates. In Indonesia situation, the outbreak of IBD in 1991 was reported can be controlled by conventional vaccination. However, the sporadic outbreak of IBD is still a serious problem for especially layer flocks. Therefore, vaccination against IBD should be recommended compulsory for commercial layers and also the program need to be revised. The reason should be considered as the layer will susceptible to secondary infection which cost more to control it such as bacterial infection, failure after vaccination etc.

Table 1. Protection rate in different group of vaccination and challenge of Gumboro disease

Group	Application of vaccine & Age of Vaccination	Age of challenge (day)	Survival rate (%) and Antibody level (group titre)					
			No vaccine (Maternal Ab)		IBDV #5		Vaccine Erp	
I	1x (7 d.o)	14	90%	4.79	90%	4.7	70%	4.7
II		21	70%	3.25	80%	2.9	80%	3.4
III	2x (7 and 14 d.o)	21	70%	3.25	80%	3.4	100%	3.4
IV		28	70%	2.5	30%	2.2	90%	4.7
V	3x (7, 14 and 28 d.o)	35	40%	2.1	50%	2.0	90%	6.6
VI		42	50%	2.0	50%	3.6	90%	7.3
IX	1x (7 d.o)	35	40%	1.8	30%	1.9	40%	2.3

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