

A New Approach to Gumboro Disease Prevention on Layer Chickens in Vietnam



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Introduction

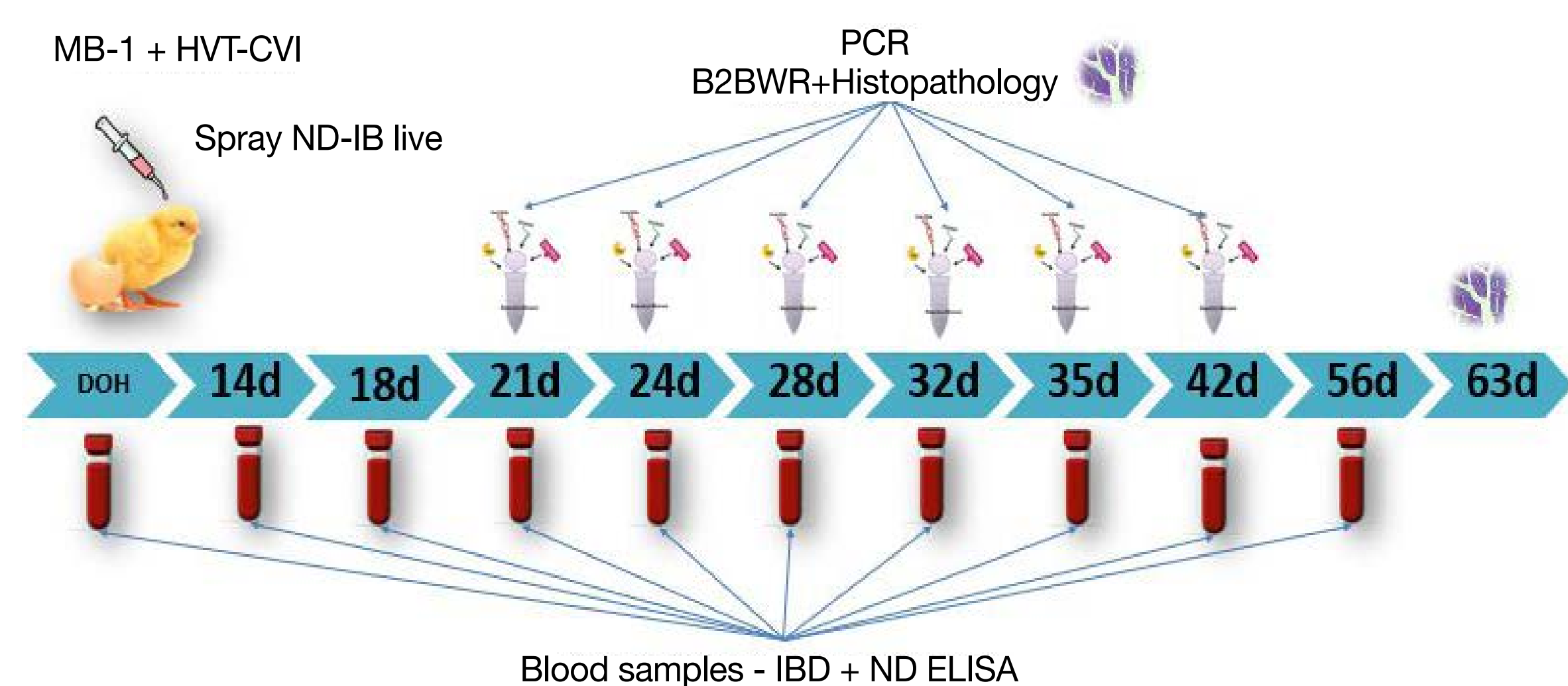
Infectious Bursal Disease (IBD) can be controlled by strict biosecurity and vaccination of parent stock and offspring. In the last 10 years hatchery vaccination by *in-ovo* or one-day-old chicks by injection became a common practice. However, not all IBD hatchery vaccines are the same or equally effective. Vector and immunocomplex vaccines often provide delayed onset of immunity presented by a late onset of antibody titer response and results in a need to re-vaccinate with live vaccines on farms located in high disease challenge areas.

The MB-1[®] vaccine strain is used for hatchery vaccination against IBD in chicken layers, breeders and broilers. This study sought to evaluate the effectiveness of a single hatchery dose of the IBD hatchery vaccine MB-1[™], applied to 48,000 DOC Isa-Brown layers in Vietnam. Parameters observed in this study were IBD and ND ELISA titers, Bursa PCR for IBD, Bursa histopathology and feather follicles PCR for Marek's virus.

Materials & Methods

48,000 ISA BROWN layer chicks were vaccinated at the hatchery according to table 1 and placed in a floor pen, commercial pullet farm in Tien Giang province, Vietnam.

Figure 1. Trail design



MB-1 was mixed with Marek's diluent and injected to the back of the neck of DOC using a Desvac machine. A vaccination program of IBD, Marek, and ND vaccines were applied and were completed according to farm procedures (Table 1).

Parameter tested

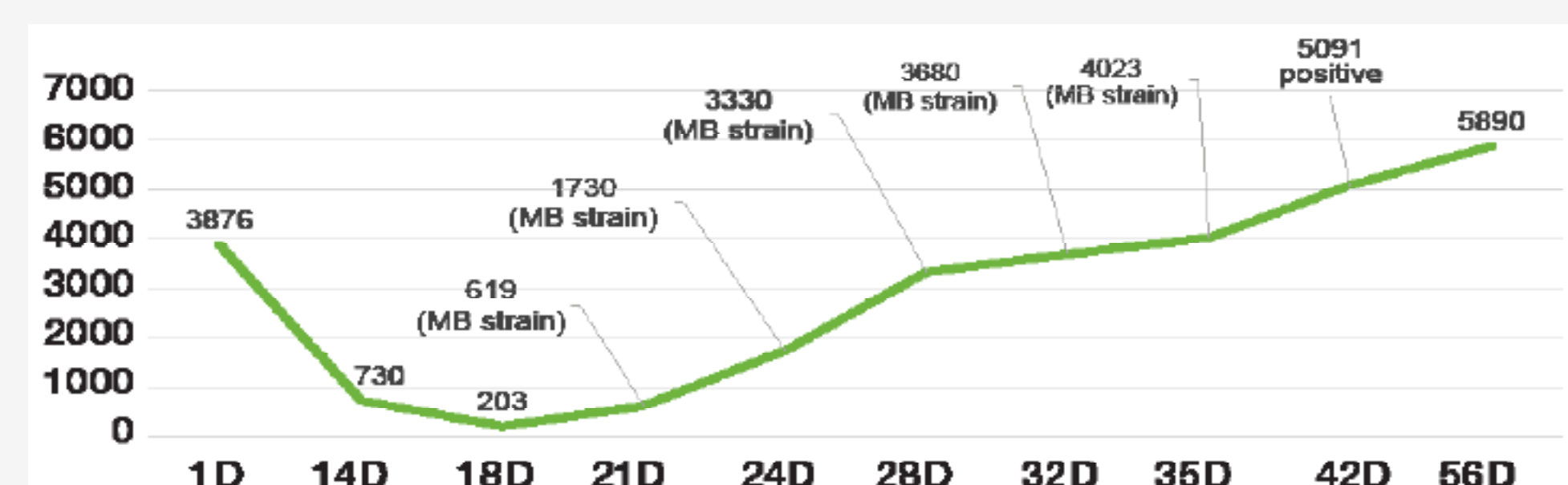
- IBD ELISA titers - IDEXX XR at the layer company lab
- ND ELISA titers - IDEXX kit at the layer company lab
- PCR (IBD & Marek*) - Professor Hess Lab (Vetmeduni Vienna, Austria)
- Bursa to Body weight ratio - on the farm
- Histopathology - Nong Lam University
- *Feather follicle samples for Marek-PCR test were taken from 6 birds at 35, & 42 days of age for HVT, CIV

Table 1.

Vaccination program (of IBD, Marek, ND in first 9 week)		
Age (d)	Vaccine	Route/dose
DOH	MB-1 + Marek HVT + CVI	SC: 0.2ml
	ND-IB	Spray
18d	Nectiv Forte	SC: 0.25ml
	ND-IB	ED
56d	Nectiv Forte	SC: 0.25ml
	ND-IB	ED

Results and Discussions

Chart 1: PCR results and IBD antibody titer response



PCR results showed that the M.B. vaccine strain appeared at 21d and was the only detected IBD viral strain until 42 days of age. Based on the antibody titer (chart 2) we assume that the actual replication started 7-10d earlier, at 11d-14d of age.

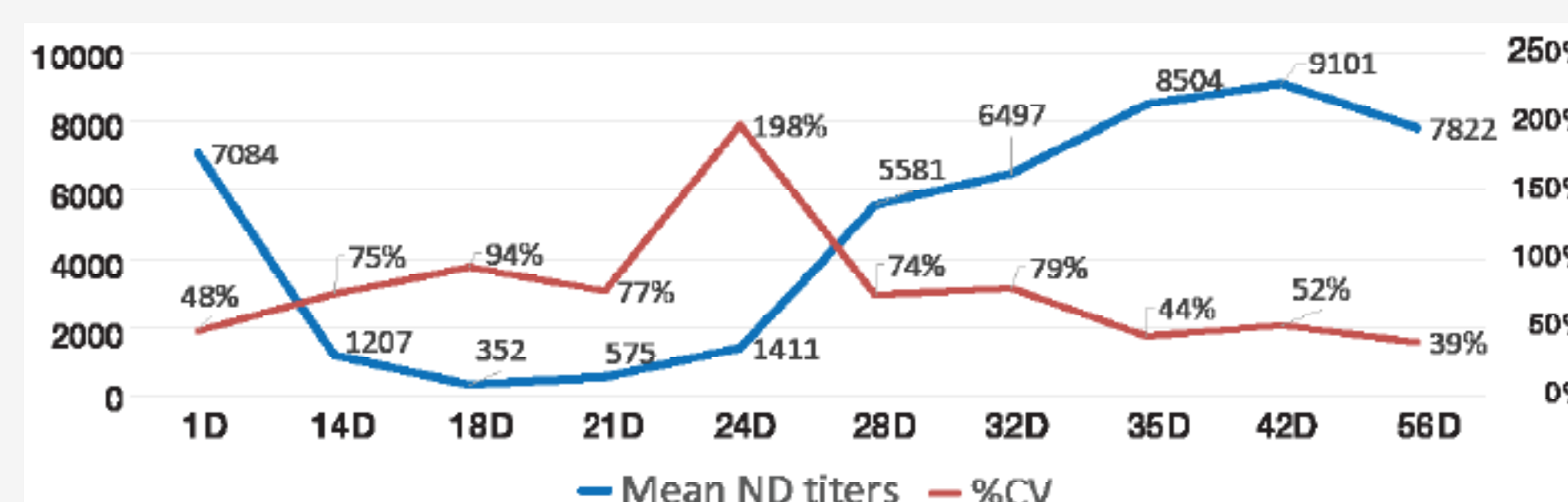
Tables 2, 3. Marek - PCR results and histopathology score

Age (d)	Marek - PCR results
35d	Neg
42d	HVT, CVI

35d	21 D (N=6)	24 D (N=6)	28 D (N=6)	32 D (N=6)	35 D (N=6)	42 D (N=6)	63 D (N=6)
Mean	3.0	3.0	3.3	3.0	2.8	2.2	1.3

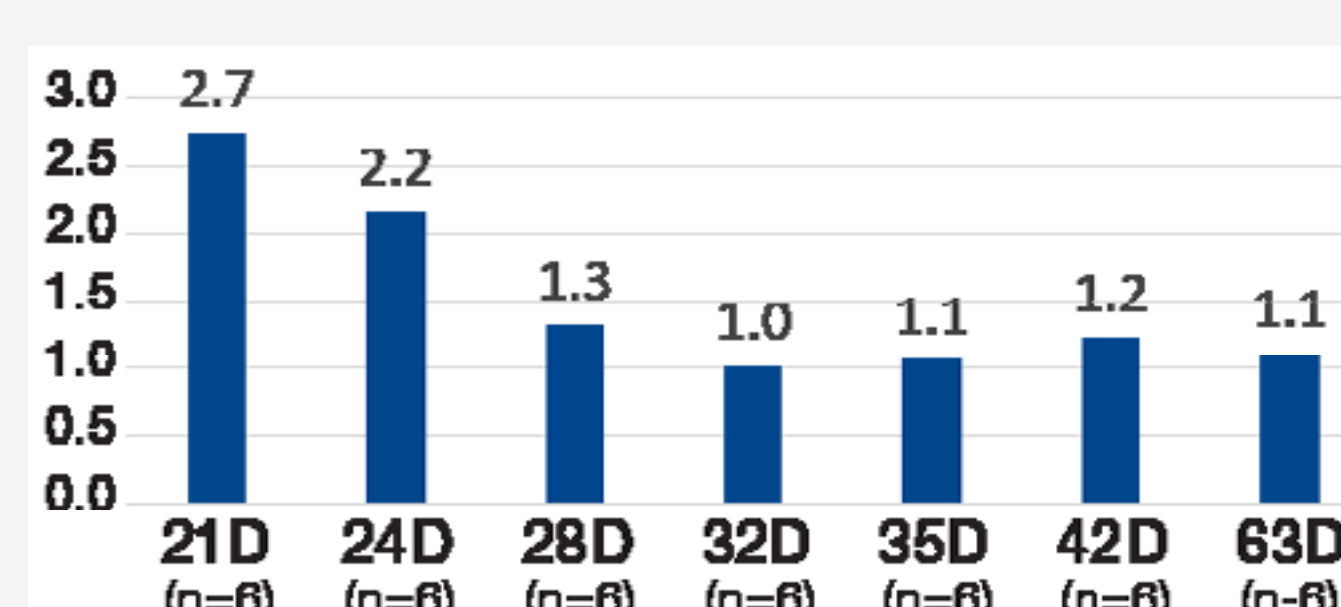
Marek's vaccines (HVT & CVI) were detected in feather follicles at 42d of age and indicated no MB-1 interference with protection from MD.

Chart 3: ND serology, ND titers



ND titers - at 28 days-old, ND titers were 5581 and the CV% was 69.1%. This demonstrated a high and uniform (CV) ND antibody titer response indicating no MB-1 interference in protection from ND.

Chart 4. Bursa to Body Weight Index (BBW)



Normal Bursa to Body Weight Ratio and Histopathology scoring were observed and indicated bursa recovery starting from 32 days of age. The bursa/spleen presented a similar trend as the bursa to body weight ratio.

Conclusions

MB-1 provides an early onset of immunity

- IBD ELISA titers in layers vaccinated with MB-1 started to rise at 21d and reached 5890 at 42d of age. The titers were uniform from 28d onwards.
- The Bursa of vaccinated layers were PCR positive for the MB-1 vaccine strain starting from 21d onwards until 42d of age.
- The titers indicate that the MB-1 vaccine started to replicate 7-10 days earlier and at 21d the PCR confirmed it to be MB, thus a very early onset of immunity.

The study indicated that the MB-1 vaccine provided very early onset of immunity and is safe for layers.

Safety

- Layers vaccinated with MB-1 had a high and uniform Newcastle titer after vaccination at 1 (Live) & 18 (Live and killed) days of age
- HVT & CVI Marek's vaccine was applied together with MB-1 in the same diluent. Birds were Marek's vaccine positive at 42d of age with no interference observed.
- Normal Bursa to Body Weight Ratio and Histopathology scoring were observed in the layers vaccinated with MB-1.

References available upon request, please contact: nguyenmanh.ho@pahc.com