

**PENGARUH *HATCH WINDOW* TERHADAP PERKEMBANGAN ORGAN LIMFOID, RESPON KEKEBALAN TERHADAP VAKSINASI *INFECTIOUS BURSAL DISEASE* (IBD) DAN BERAT BADAN PADA LAYER JANTAN KOMERSIAL**

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**INTISARI**

Pada suatu kelompok telur tetas mungkin terdapat perbedaan waktu antara yang menetas awal dengan terakhir, atau sering disebut sebagai *hatch window* (HW). *Hatch window* panjang mengakibatkan kualitas anak ayam rendah dan kerusakan organ-organ limfoid, sehingga menekan kekebalan dan mengganggu respon kekebalan anak ayam terhadap vaksinasi. *Infectious bursal disease* (IBD) adalah penyakit penting pada ayam yang menyebabkan kerugian ekonomi yang besar namun dapat dikendalikan melalui vaksinasi. Penelitian ini dirancang untuk mengetahui pengaruh *hatch window* terhadap perkembangan organ limfoid, respon kekebalan terhadap vaksinasi IBD dan berat badan pada layer jantan komersial. Total 72 ekor *day old chick* (DOC) layer jantan dibagi menjadi tiga kelompok dengan tiap kelompok 24 ekor DOC berdasarkan HW, yaitu awal (HA), tengah (HT) dan akhir (HR). Pada waktu *pull chick*, 10 ekor anak ayam dari tiap kelompok berat badannya ditimbang secara individu. Pada sampel yang sama, anak ayam diambil darahnya untuk uji titer maternal antibodi terhadap IBD menggunakan ELISA, kemudian anak ayam dinekropsi untuk menentukan berat *yolk sac*. Sisa anak ayam dipelihara di boks selama 4 minggu, diberi makan dan minum *ad libitum*. Berat badan ditimbang tiap minggu sampai dengan anak ayam umur empat minggu. Umur dua minggu, semua anak ayam divaksinasi dengan vaksin *live IBD intermediate strain Lukert* satu dosis per ekor melalui oral. Empat hari dan 14 hari pasca vaksinasi, empat ekor anak ayam dari tiap kelompok dinekropsi kemudian bursa Fabricius dan limpa ditimbang. Bursa Fabricius, limpa dan timus difiksasi dalam formalin 10% untuk uji histopatologi. Dua minggu pasca vaksinasi, semua anak ayam diambil darahnya untuk mengukur antibodi terhadap IBD menggunakan ELISA. Data kuantitatif dianalisis dengan *one-way ANOVA* menggunakan *software SPSS*. Hasil penelitian ini menunjukkan tidak terdapat perbedaan yang signifikan ( $p > 0,05$ ) berat DOC, berat relatif *yolk sac*, berat relatif bursa Fabricius dan limpa, titer maternal antibodi dan titer antibodi pasca vaksinasi IBD antara *hatch window* awal, tengah, dan akhir. Berat badan kelompok HT dan HR lebih besar ( $p < 0,05$ ) dibandingkan HA pada umur tiga minggu dan empat minggu. Vaksinasi IBD menggunakan galur *intermediate strain Lukert* menyebabkan nekrosis limfosit yang ringan pada timus dan bursa Fabricius pada semua kelompok pada 4 hari dan 14 hari pasca vaksinasi IBD.

Kata kunci : Antibodi, *hatch window*, ELISA, IBD.

**THE EFFECT OF HATCH WINDOW ON LYMPHOID ORGAN DEVELOPMENT, IMMUNE RESPONSE TO INFECTIOUS BURSAL DISEASE (IBD) VACCINATION AND BODY WEIGHT IN COMMERCIAL MALE LAYER**

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**ABSTRACT**

In a group of hatching eggs maybe there is a gap of time from the first to the last hatched, or often referred to as the hatch window (HW). Long hatch window leads to low chick quality and lymphoid organs damage, which may cause immune suppression and consequently impairs antibody response of chicks to vaccinations. Infectious bursal disease (IBD) is an important disease for poultry which cause significant economic losses, although it can be controlled by vaccination. This study was designed to investigate the effect of hatch window on lymphoid organ development, immune response to IBD vaccination and body weight in commercial male layer. A total of 72 day old chicks (DOC) male layer were divided into three groups consisted of 24 DOC of each group based on HW, early (HA), middle (HT) and late (HR). At time of pull chick, 10 chicks of each group were individually weighed for body weight. For the same samples, chicks were bled for testing the maternal antibody against IBD using ELISA, then chicks were necropsied to determine yolk sac weight. The rest chicks were raised in box for four weeks, and provided with feed and water ad libitum. All chicks were weekly weighed until four weeks of age. At two weeks of age, all of chicks were vaccinated with live intermediate IBD vaccine of Lukert strain, one dose per chick via oral. At four and 14 days post vaccination, four chicks from each group were necropsied, then bursa Fabricius and spleen were weighed. Bursa Fabricius, spleen, and tymus were fixed in 10% formalin for hystopathologic examination. Two weeks post vaccination, all chicks were bled to measure the antibody against IBD using ELISA. The quantitative data were analyzed using one-way analysis of variance (ANOVA) using SPSS software. Results showed that there were no significant differences ( $p>0.05$ ) in relative weight of yolk sac, bursa Fabricius, and spleen, maternal antibody titers and antibodies post vaccination against IBD between early, middle and late hatch window. Body weights were greater ( $p<0.05$ ) in HT and HR groups compared to HA at three weeks and four weeks of age. Vaccination with live intermediate IBD vaccine of Lukert strain caused mild lymphocyte necrotic on thymus and bursa Fabricius in all groups at four days and 14 days post IBD vaccination.

Key words : Antibody, hatch window, ELISA, IBD.