

## EFEKTIVITAS WATER ADDITIVE KIMCHI TERHADAP KEMUNGKINAN KEJADIAN INFEKSI ALAMI AVIAN INFLUENZA PADA AYAM PEDAGING

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16/403508/PKH/00589

### INTISARI

*Avian influenza* (AI) merupakan penyakit infeksius pada unggas yang menyebabkan kerugian ekonomi yang tinggi. Wabah AI tahun 2003 di Indonesia menyebabkan kematian mendadak dalam jumlah besar pada unggas dewasa. Virus AI telah menginfeksi *day old chick* (DOC) secara subklinis pada tahun 2010. Keberadaan virus AI sejak DOC dapat mengganggu keberhasilan vaksinasi. Alternatif lain diperlukan untuk meningkatkan imunitas bawaan unggas sekaligus mencegah infeksi AI. Tujuan dari penelitian ini adalah untuk mempelajari pengaruh *water additive* kimchi yang disuplementasikan pada ayam pedaging terhadap kemungkinan terjadinya infeksi alami oleh *avian influenza virus* yang dipelihara di peternakan broiler komersial. Lima puluh lima ekor DOC ayam pedaging *strain* Cobb digunakan sebagai hewan coba selama 35 hari. Lima ekor DOC dipilih secara acak dan dinekropsi untuk diambil organ paru – paru sebelum dilakukan perlakuan (minggu ke-0). Lima puluh ekor DOC yang tersisa dibagi secara acak menjadi dua kelompok perlakuan. Kelompok pertama (K1) adalah kontrol tanpa suplementasi, sedangkan kelompok kedua (K2) adalah perlakuan suplementasi *water additive* kimchi 0,2% (dosis 2 g/1000 ml, selama 5 hari/minggu). Sebanyak lima ekor ayam dipilih secara acak pada masing – masing kelompok untuk dikoleksi serum dan organ paru – paru pada setiap minggu (minggu ke-1 sampai ke-5). Deteksi virus AI dilakukan dengan *reverse transcriptase polymerase chain reaction* (RT-PCR) konvensional terhadap gen Matrix (MA) pada sebelas sampel *pooling* paru – paru (DOC, K1 dan K2). Hasil RT-PCR dielektroforesis dan dianalisis secara deskriptif. Sampel serum diuji titer antibodi terhadap virus AI menggunakan uji *haemagglutination inhibition* (HI) dan dianalisis dengan uji *Chi-square* ( $\chi^2$ ). Hasil Uji RT-PCR menunjukkan bahwa sampel paru-paru K2 minggu pertama dan kedua terdeteksi AI, namun tidak terdeteksi pada K2 minggu ketiga sampai kelima, DOC dan semua sampel K1. Titer antibodi K1 dan K2 tidak memiliki perbedaan yang signifikan ( $p>0,05$ ), namun titer pada minggu pertama lebih tinggi dibandingkan minggu lainnya. *Water additive* kimchi 0,2% yang disuplementasikan pada ayam pedaging komersial dapat mencegah infeksi alami AI setelah pemberian selama tiga minggu.

Kata kunci: *avian influenza virus*, *water additive*, kimchi, ayam pedaging, RT-PCR

## **EFFECTIVENESS OF WATER ADDITIVE KIMCHI AGAINST THE POSSIBLY NATURAL INFECTION OF AVIAN INFLUENZA VIRUS IN BROILER CHICKENS**

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### **ABSTRACT**

Avian influenza (AI) is an infectious disease in poultry causing high economic losses. The first AI outbreak in Indonesia occurred in 2003. The outbreak caused sudden deaths in large numbers of adult poultries. But in 2010, the AI virus (AIV) infected day-old chick (DOC) subclinically. The presence of AIV since DOC could have disturbed the successfulness of vaccination. Therefore, another alternative approved is needed to increase avian innate immunity and to prevent AIV infections. The aim of this study is to evaluate the effect of water additive kimchi supplementation in broiler against the possibility of natural infection by AIV in commercial broiler farms. Fifty five DOC broiler chickens, Cobb strains were used as the experimental animals for 35 days. Prior treatment (week 0), five DOCs were selected randomly and the lung organs were collected. The remaining of fifty DOCs were randomly divided into two treatment groups. The first group (K1) was a control group without supplementation, the second group (K2) was given a 0.2% water additive kimchi supplementation treatment (dose 2 g/1000 ml, for 5 days/week). In each week (week 1 to 5), five chickens were randomly selected in each group for sera and lungs collection. AIV detection was performed by reverse transcriptase polymerase chain reaction (RT-PCR) against Matrix genes (MA) on eleven pooling samples of lung (DOC, K1 and K2). The RT-PCR results were electrophorised and analyzed descriptively. Sera samples were tested for antibody titers against AI virus using hemagglutination inhibition (HI) test and analyzed by using Chi-square test ( $\chi^2$ ). The RT-PCR test results showed that AIV was detected in lung samples of K2 in first and second week, but the AIV was not detected in third until fifth week. The AIV was also not detected by RT-PCR in DOC and all of chickens in group K1. The K1 and K2 antibody titers did not show any significant differences ( $p > 0.05$ ), but the antibody titer in the first week was higher than that of others. Based on the results of the present study, it could be concluded that supplementation of water additives kimchi 0,2% in commercial broilers could have prevented natural AIV infections in chickens after administration for three weeks.

**Keywords:** avian influenza virus, kimchi, water additive, broiler chickens, RT-PCR