Effectiveness of Giving *Meniran* (*Phyllanthusniruri L*) and *Sambiloto* (*Andrographis paniculata*) Extract with Different Compotition on The Immune and Performance Responsibility of Broiler Chicken Post to ND Vaccination

Puji Astuti[1] and Gebby Citra Vasthu Gumilar[1]
[1]Akademi Peternakan Karanganyar
Coresponding author : tutiamir88@gmail.com

Abstract

This research aims to determine the effect of differences in the composition of *Meniran* and *Sambiloto* on immune and performance responsibility of broiler chickens. The research was conducted at UPT Akademi Peternakan Karanganyar. The research used as many as 60 broiler chickens that is devided into 4 groups of treatments and 3 replication. The treatment is applied the administration of *Meniran* and *Sambiloto* extract in the water, that is including of:T0 (Control): water without feed additive, T1: addition of *Meniran* and *Sambiloto* extract with a composition of 75 : 25%, T2: addition of *Meniran* and *Sambiloto* extract with the composition 50 : 50%, T3: the addition of *Menirani* and *Sambiloto* extract with a composition of 25: 75%. The addition of *Meniran* and *Sambiloto* extract as much as 300 mg/liter of drinking water. The design is used a completely randomized design. The parameters were observed the performance including of feed consumption, body weight gain, and feed conversions. The data of immune responsiveness were analyzed descriptively and the data of performance were analyzed by using variannce analysis. Based on the results of the variance analysis that is *Meniran* and *Sambiloto* extracts with a ratio of 25% : 75% can increasing the chicken appetite compared with the treatment control but it have not effect on the body weight gain, and feed conversion. The data of ND titer shows there is a protective titer achievement of ND (log23-log25). Lymphocyte data shows the protective numbers. It was concluded that the differences in composition of *Meniran* and *Sambiloto* extracts did not show the performance differences, but were able to improve the immune response of broilers.
Keywords: composition of *Meniran* and *Sambiloto* extracts, performance, immune response, broilers.

Introduction

The chicken disease is caused of some factors, such as viruses, bacteria, fungi, toxin, deficiency, and extreme environmental conditions. The pathogenicity disease varies depending on the type and characteristic of the causative agent, there are acute and chronic. The effors are made to control the disease usually with prevention and treatment. Prevention is done by vaccination and administration of antibiotics. The treatment for inefficient broilers for the broiler farms.

Usually, the vaccination for broiler is done to prevent the Newcastle Disease (ND), Avian Influenza (AI), and Infectious Bursal Disease (IBD). Some of this disease are acute and can be subclinical, for example AI and ND. Although, it has been

vaccinated occationally this disease can appear. The disease did not couse death which was too high but it had an effect on the decline in production, because the growth of chickens was disrupted.

Newcastle Disease or called *tetelo*, pseudovo-gelpest, pseudo fowl plaque, or avian pneumo encephalitis is a contagious infectious disease which is still be the top rank of causing deaths in livestock, both race and domestic, after AI.

Some medicinal plants such as *Meniran* and *Sambiloto* have been used for generations by Indonesian society as a traditional medicine. *Sambiloto* contain of hepatoprotective effect, immunological potetential, anti-inflamatory, that can work in the respiratory system, anti-malaria, anti-diarrhea, and has a good effect for the heart. *Meniran* has been used as a nutritious drug for various diseases such as wounds, swelling, hives, liver disorders, kidney stones, and digestive disorders. Even, in India it is commonly used to handle the snake bites (Kardiman and Fauzi, 2004).

Meniran has properties as an antiviral drug. Compounds found in *Meniran* include triterpenoids, flavonoids, tannins, alkaloids, and phenolic acids. *Meniran* are used as traditional medicine to treat the liver disease, diuretics, veneral disease, cough medicine, anti-diarrhea, canker sores, heartburn and gastric tonic. Baed on the results of the research

Suhirman and Winarti (2010), shows that *Meniran* has a function to inhibit DNA polymerase from the hepatitis B virus and other hepatitis viruses, inhibiting the reverse transcriptase enzyme from retroviruses, anti-bacteria, antifungal, anti-diarrhea, and another gastrointestinal disease. While *Sambiloto* containing of *Andrographolide* and flavonoid that can increase the proliferation of lymphocyts and antibodies (Januwati, 2012; Rahman and Suhesti, 2016). *Meniran* and *Sambiloto* have the same activities that affect immune responses. Immune response associated with lymphoid, including the spleen. The formula for medicinal plants extract is expected to have a good influence for the spleen and immune system that can be considered as an alternative medicine for the chicken.

The purpose of this research is to look at the immune response and performance of the broilers after ND vaccination by awarding *Meniran* and *Sambiloto* extracts.

Materials and Methods

The research used as many as 60 of broilers, that is devided into four treatments and replications, each consist of five chickens. This research conducted in Animal Husbandry Practice Unit (UPT) Academy (APEKA) of Karanganyar. The material that is used in this research are ethanol extract and water of *Meniran* and *Sambiloto*, BR 1 feed which contains of 21 protein. The chickens are kept in 12 unit of cage measuring 1x1m, each cage contain of 5 chickens.

The treatment that is applied the awarding of *Meniran* and *Sambiloto* extract as follows:

Treatment 1 (T0): the chickens without extract (control)

Treatment 2 (T1): the chickens are given 75% of Meniran extract : 25% of Sambiloto extract

Treatment 3 (T2): the chickens are given 50% of Meniran extract : 50% of Sambiloto extract

Treatment 4 (T3): the chickens are given 25% of Meniran extract : 75% of Sambiloto extract

Blood sampling is done before the vaccination (H0), 7 days after the vaccination (H+7), 14 days after the vaccination (H+14), 21 days after the vaccination (H+21), 28 days after the vaccination (H+28). The blood samples were taken 0.75 ml/head from the brachialis vein by using the sterile syringes, that is insertedin a tubes that had been given antifreeze.

Making Ethanol Extract

Meniran and *Sambiloto* are dried until dry. After drying, they are pounded into the fine flour. The fine flour was obtained then extracted (is soaked) with ethanol solvent for 24 hours, then filtered it. This extraction is done twice. The Ethanol extract was obtained from the evaporation for three days to get the thick extract (Risfaheri et al., 1997).

Sampling and Laboratory Analysis

Blood sampling is carried out during the vaccination (H0), 7 days after the vaccination (H+7), 14 days after the vaccination (H+14), 21 days after the vaccination (H+21). The blood samples was taken 1.5 ml/head from the brachial vein by using sterile syringe. As much as 0.75 ml of bloods is put on the tube that has been given blood antifreeze and then remaining of 0.75 ml is inserted into the tube until it is frozen to collect the serum to be tasted for antibody titers and counting of lymphocytes. The bloods samples for lymphocytes is made smear preparations by using glass objects. The vaccine that given is Lasota ND strain vaccine.

Parametrs measured:

Immune responses: antibody titers, and lymphocytes Performance: Feed consumption (gram/head/day) the body weigh gain (gram/head/day), and the feed conversion.

The Data Analysis

The data of immune responses (antibody and lymphocyte titerss) were analyzed descriptively. Performance data (feed consumption, body weight gain, and feed convension) were analzed for variance by using a Completely Randomized Design (CRD) and differences between the treatments were further tasted with Duncan's Multiple Range Test

Result and Discussions

Antibody Titers

The immune response to Newcastle Disease (ND) in the chickens showed different mean Newcastle Disease (ND) antibody titers are shown in Table 1. The results of the antibody titre test showed that before the chicken received meniran extract and sambiloto the chicken had an ND titre because it was still have antibodies from the mother (maternal antibody). According to Saputra (2013), antibodies of parent origin are antibodies that are passively obtained from the mother through egg yolk. Egg yolks

get antibodies from the hen serum when the egg formation process takes place in the ovary. These parent antibodies will decrease rapidly with increasing age of chickens and become insignificant at the age of 4-5 weeks (Ronohardjo 1980 in Saputra 2013). According to Nahamya et al. (2006) chickens are said to be protective against death due to challenging tests of virulent ND viruses if they have an antibody titre of 3 log 2 or more. According to Office International Epizootic (2008), antibody titers are said to be protective against ND if they have an antibody titre of at least 5 log 2. On the 7th day the antibody titers decreased in all treatments. On days to H-14 antibody titers increase. The decrease is caused by a vaccine given when a four-day-old chicken is neutralized by maternal antibodies. At H-21 and H-28 titer antibodies decreased. In this study, it was shown that all treatments using meniran extract and sambiloto had better levels of antibody titer protection than without using extract (control). This is in accordance with the results of Suripta et al. (2014).

Lymphocytes

Lymphocytes are white blood cells belonging to the agranulocyte group. Salasia and Hariono (2010) state that lymphocytes are in charge of responding to the presence of antigens and stress by increasing circulating antibodies in the development of the immune system. The percentage of lymphocytes in poultry blood ranges from 42 - 66% (Harahap, 2014). The high number of lymphocytes in the blood of broiler chickens treated with meniran and sambiloto can be caused by the presence of andrographolide in bitter which can stimulate the proliferation process resulting in an increase in the number of lymphocytes. The increase in the percentage of blood lymphocytes of broiler chickens given meniran extract and sambiloto extract increased but still under normal conditions which meant that the health condition of chickens was in optimal condition. On the 7th day after vaccination the number of lymphocytes showed an increase. On days 14 and 21 the number of lymphocytes increased in all treatments, but the increase in T1 was higher compared to other treatments. On the results of the 28th day test the number of lymphocytes has increased compared to the other treatments, in the treatment of 75%: 25 menoto sambiloto composition, the number of lymphocytes is still high.

Chicken Performance

Broiler performance are observed included the feed consumption, body weight gain and feed conversion. The results of the research on the feed consumption showed a treatment with a composition 25% of meniran and 75% sambiloto able to increase appetite in chickens. This treatment is different from the control, but shows the same response with 50%: 50% and 75% : 25% menoto bitter composition. The main active substance contained in bitter plants is Andrographolide which has multi pharmacological effects (Taha, 2009). The bitter taste can increase appetite because it can stimulate salivary gland secretion and increase anti-body production so that the body's immunity increases. In addition meniran has a bitter taste, is rather sour, and is cool or cool.

The average of daily body weight gain during the research was in accordance with the standards (53.43 - 57.34 grams / head / day). Although the feed consumption is increasing, especially in the treatment of the composition of meninan and sambiloto 25%: 75%, but does not affect the increase in body weight of chickens. Qurniawan

(2016) argues that the factors that influence body weight gain are gender differences, feed consumption, environment, seeds and feed quality. Uzer et al (2013) that body weight gain is closely related to feed, in terms of quantity related to feed consumption if feed consumption is disrupted it will disrupt growth.

According to Japfa Comfeed Indonesia (2012), the weekly performance standard in Brooh Lohman MB202 is 1.56 while in this study 1.65. The treatment of differences in the composition of meniran and sambiloto does not affect feed conversion. Feed conversion is influenced by body weight gain and feed consumption. Although feed consumption is increasing, it is not in line with body weight gain.

Conclusion

Based on the results of the research, the researcher concluded that meniran and sambiloto extract with a ratio of 25%: 75% can increase appetite in chickens compared to the control treatment. The composition of meniran and sambiloto extracts is able to increase ND and lymphocyte titers.

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