

Effect of Chlortetracycline Additive in Broilers Fed Local Diets on Antibody Titers to NDV Vaccine

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Abstract: A research was carried out to study the effect of antibiotic chlortetracycline in drinking water on broilers antibody titers to NDV vaccine. Broilers were fed local diet with two different sources of essential amino acid i.e. yeast (in diet 1) or mix lysine, methionine and choline (in diet 2). Two hundred and fifty day old chicks CP 707 were randomly assigned into five treatment diets i.e. 1) commercial diet (Dc), 2) diet 1 without chlortetracycline (D1), (3) diet 2 without chlortetracycline (D2), (4) diet 1 plus chlortetracycline 500 ppm via drinking water (D1+), (5) diet 2 plus chlortetracycline 500ppm via drinking water (D2+). Isoenergy diet and water were given *ad libitum*. NDV vaccine were given simultaneously via eyedrop and subcutaneous on day 4. Serum antibody titers were measured on day 18, 21 and 25 by Haemagglutination Inhibition Test and expressed as Geometric Mean Titer (log 2). Antibody titer to NDV vaccine was already detectable two weeks after vaccination (on day 18). The titer value was highest in D1+ reaching 6.0 which was above protective level and the lowest value was found in D1 i.e. 2.75 ($p < 0.05$). On day 21 the highest titer was also found in D1+ which remained protective i.e. 5.5 and the lowest one in Dc. On day 25 the highest titer was found in D2 (6.5) and the lowest in Dc (4.25) ($p < 0.05$). These results showed that antibody titers to NDV vaccine in broilers receiving local diet minus antibiotics can match the titers of broilers receiving local diet plus antibiotics. Moreover the broilers receiving local diet without antibiotics produced protective and better titers values at the end of sampling period on day 25 or 3 weeks after vaccination, reaching 5.0 in D1 and 6.5 in D2 respectively.

Key words: Chlortetracycline, sorghum, mungbeans, antibody titer, NDV vaccine

INTRODUCTION

Antibiotics are common feed additives found in broilers commercial feed (Murwani and Bayuardhi, 2007). The action of in feed-antibiotics is largely known to be mediated by a decrease in the number of competitive pathogenic bacteria in the gut and therefore reducing bacterial load in the gut (Dibner and Richards, 2005). Reduced bacterial load would decrease immune stimulation which is associated with impaired performance (Klasing, 1997; Cook, 2000; Dibner and Richards, 2005). In feed-antibiotics therefore are useful in preventing bacterial infection and protect broilers from heat stress in hot and humid climate like Indonesia. In addition, it is a common practice in the management of broiler production to administer antibiotics via drinking water (Murwani and Bayuardhi, 2007). Such practice is helpful in maintaining broilers health, suppress mortality, support maximal growth via improved utilization of nutrients and hence remains profitable.

In attempt to reduce and eliminate antibiotic use in feed and medication program, a previous research had been carried out to evaluate the effect of feed ingredient types in the diet of broilers (Murwani, 2008). The usual notion that feed ingredients are only associated with growth performance is bridged by that study to relate feed ingredients with immune response and to use NDV

vaccination as a tool to measure one arm of humoral immune response. That study showed that the use of local mungbean or sorghum at certain level in the diet improved antibody titers to NDV vaccine. The improved titers was thought to be due to naturally occurring phytonutrients such as β -carotene and poliphenol in mungbean and poliphenol in sorghum. Such phytonutrients in pure isolated forms have been shown by other studies to modulate immune response (Chew and Park, 2004; Scalbert *et al.*, 2005; Hikosaka *et al.*, 2006; Neyestani *et al.*, 2008). Based on the study, further research was performed to evaluate the effect of utilizing these local feed ingredients together and combined with or without chlortetracycline via drinking water on the response of antibody to NDV vaccine. The effect of such antibiotic use together with diet composition on antibody titers to NDV vaccine has not been studied elsewhere and the following study was carried out to provide such information. The results of this study may provide useful information for rational use of antibiotic additives in broiler production system.

MATERIALS AND METHODS

Birds and diets: All feed ingredients were obtained from local feed producers. Corn, sorghum and mungbean