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Effect of Corn or Sorghum in Combination with Soybean Meal or Mungbean as Feed Ingredients on the Serum Antibody Titres to NDV Vaccine in Broiler Chickens

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Abstract: A research was carried out to study the effect of feed types in the diet based on corn or sorghum in combination with soybean meal or broken green beans on titre antibody to NDV vaccine of broilers. Three hundreds day old chicks broilers with initial body weight of 46.35±4.66 grams were randomly assigned into four treatment groups i.e. T1 (diet based on corn and soybean meal), T2 (diet based on corn and green-bean), T3 (diet based on sorghum and soybean meal), T4 (diet based on sorghum and green-bean). Isoenergy and isoprotein diet and water were given *ad libitum*. NDV vaccines were given via eyedrop on day 4 and intramuscularly on day 21. Serum antibody titres were measured on day 38, 42 and 48 by Haemaglutination Inhibition Test and expressed as Geometric Mean Titre (log2). Antibody titre to NDV vaccine was already detectable on day 38 and the value was highest in T4, reaching 5.2 and lowest in T3 i.e. 3.6 ($P<0.05$). On day 42 the titre of all groups were increased reaching a value of greater than 5.0 (protective) except in T3 which remains lower than 5.0 (not protected). On day 48 the highest titre was reached in T2 (6.4), while T3 remained low below 5 (4.2). These results showed that the types of feed ingredients in the diet can influence antibody titre against NDV vaccination.

Key words: Sorghum, green beans, antibody titre, NDV vaccine

Introduction

Feed ingredients accounts for approximately 70% of total cost in poultry production. While corn and soybean meals are the most common feed ingredients used in poultry diet, imported soybean meal is a limiting factor due to its steady increase in cost. Alternatives to soybean meal therefore has been sought. One of locally available vegetable protein is broken green beans (BGB) which are abundantly available during the harvest season as a by product of green beans sortation and milling process. Its protein contents varies from 22-25% (Indriani and Murwani, 2005). Other locally available grain is sorghum which has been well studied to substitute for corn and contains a potent antioxidants poliphenolic tannin (Awika *et al.*, 2000).

The use of locally available feed grains such as corn, sorghum, or green beans provides not only macro- and micro-nutrients but also other functional phytochemicals such as carotenoids in corn and green beans and poliphenols in sorghum and green beans. The antioxidant and immunomodulating properties of carotenoids and poliphenols are well known and they have been shown to affect immune response by protecting against oxidative stress and lipid peroxidation, improving humoral and cellular immune response indicated by increase in B and T cell proliferation (Bendich, 2004).

Such naturally occuring phytochemicals in feed ingredients in the diet therefore could have the same function as modulator of immune response *in vivo*. However, such studies are very limited since feed ingredients are generally associated only with production. On the other hand disease challenges by microbes are common in poultry production, especially in tropical country like Indonesia. As in-feed antibiotics use to reduce microbial challenges is increasingly banned worldwide, alternatives are being sought and studied. This research was carried out to study the effect of feed types in the diet (based on corn or sorghum in combination with soybean meal or broken green beans) in the absence of in-feed antibiotics on titre antibody to NDV vaccine in broilers. The results of this study could provide information on the benefit of feed types in improving poultry health.

Materials and Methods

Birds and diets: All feed ingredients were obtained from local feed producers except for soybean meal which was obtained from commercial feed producers. Corn, sorghum and broken mungbean were obtained in grain form with moisture content around 10 to 11%. These feed ingredients were ground separately and stored in

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