

## **Effects of Copra Meal Fermented by *Aspergillus niger* and *Trichoderma spp* on Performance of Broiler**

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### **ABSTRACT**

Inclusion of copra meal in the diet could impair the performance of birds due to its physical and nutritional problems. Improving feed quality by fermentation has long been believed. An experiment was conducted to examine the effects copra meal (CM) fermented by *Aspergillus niger* and *Trichoderma spp* on bird performance. One hundred twenty six day old unsexed Cobb chicks were used in this study. The birds were fed seven different diets (0% CM, 10% CM, 10% CM supplemented with 1% *Aspergillus niger* fermented CM, 10% CM supplemented with 1% *Trichoderma* fermented CM, 30% CM diet, 30% CM supplemented with 1% *Aspergillus niger* fermented CM, 30% CM supplemented with 1% *Trichoderma* fermented CM. Feed and water were available at all times. A completely randomised design was applied in this experiment with seven treatments and three replicate cages. Data indicated that body weight gain of birds fed the supplemented CM diet with 1% fermented CM tended to be higher than those of birds fed the un supplemented CM diet. This trend became evident when the birds fed 30% copra meal diet. The birds fed 30% copra meal diet supplemented with 1% *Trichoderma* fermented CM had higher body weight gain than those of birds fed the un supplemented 30% CM diet (1711 gram vs 1421 gram). Feed conversion ratio of bird fed 30% CM was also affected by fermentation with *Trichoderma spp*. Feed consumption was not affected by addition of copra meal diet with 1% fermented CM. Fermentation of copra meal with *Trichoderma spp* could improve the performance of bird in a diet containing 30% copra meal.

*Key words: fermentation, copra meal and broiler*

### **INTRODUCTION**

Nutritionally, copra meal contains 21 - 25% protein and 7% lipid. The nutrient contents of copra meal appear quantitatively favourable. However, nutrient qualities are poor, possibly because of heat damage during the drying or oil extraction processes (Butterworth and Fox, 1963), the presence of indigestible polysaccharides, especially mannan and galactomannan (Balasubramanian, 1976; Saittagaroon *et al.*, 1983), and low levels of several limiting amino acids (NRC, 1994). These components impair the nutritive value of the diet when copra meal is added into the diet (Sundu *et al.*, 2006).

Fermentation has been practiced for quite long time as a means to improve the quality of food. Fermentation process using filamentous fungi, such as *Aspergillus niger*, has been applied to improve nutritive value of soybeans (Chah *et al.*, 1975; Mathivanan *et al.*, 2006), guar meal (Nagra *et al.*, 1998) and tofu waste (Rasud, 2009) for poultry. The fermentation process can create

conditions for the growth of microorganisms that break down fibre and anti-nutrients.

Filamentous fungi, such as *Aspergillus niger*, has capacity to produce various enzymes such as hemicellulase, pectinase, lipase and tannase (Pinto *et al.*, 2001; Mathivanan *et al.*, 2006). Fermented feedstuffs (fermented copra meal using filamentous fungi) can simply be used as enzymes sources. Accordingly, the use of fermented copra meal in small quantity can improve nutritive value of copra meal based diet. This study was undertaken to examine supplementation of fermented copra meal in copra meal based diets on bird performance.

### **MATERIALS AND METHODS**

#### **Fermentation Process**

Copra meal was used as solid substrate for fermentation. A total of 500 gram of substrate was placed in a plastic tray and moistened with 250 ml distilled water. The medium was