Palm kernel cake in rations of muscovy ducks

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Key words: palm kernel cake, ducks, oil palm by-products, metabolisable energy, palm oil

Introduction

In any poultry enterprise feed is the most important factor that determines the feasibility of the activity. In Malaysia, most of the feed ingredients for poultry are imported. In fact, in 2002 Malaysia imported about 2.0 billion worth of feedstuffs from many countries. As it is 90 per cent of the feed ingredients are corn, soyabean, Palm kernel cake (PKC) is a by-product of the oil palm industry obtained after oil is extracted from the kernel of the palm fruit. In Malaysia, palm kernel cake (PKC) has been used as feed for poultry. Earlier studies have shown that poultry can tolerate up to 20% of in rations of poultry without showing deleterious effects. However, recent trials with ducks have shown that ducks were able to tolerate up to 35 % of PKC with a slight reduction in feed efficiency. The objective of this study was to examine the effect of replacing corn with PKC in diets of muscovy ducks and also to compare if there were differences between broiler chickens and ducklings in the utilisation of nutrients in PKC.

Materials and Methods

Three experiments were conducted to evaluate the utilisation of palm kernel cake (PKC) by growing muscovy ducks. In the first experiment, two types of PKC (solvent and expeller extracted PKC) were forced fed to male and female muscovy ducks 7 weeks of age, to examine the nutrient digestibility, metabolisable energy and true amino acid digestibility of PKC. .

In the second experiment, 72 males and 72 female ducks of 15 days old were divided into groups of four and fed diets containing 0, 15 and 35 % PKC for 7 weeks. The diets were isonitrogenous (21%CP) and isocaloric (3000 kcal/kg). 4 bird and . old muscovy ducks were offered diets containing 0, 15, and 35 % PKC. Feed intake, live weights and FCR were determined on a weekly basis. At the end of the trial the birds were slaughtered and carcass composition determined.

In the last experiment, forty day-old male muscovy ducklings and 40 male broiler chicks (Cobb) were divided into 20 groups of 4 birds each and fed diets corn-soya bean meal diets with or without 25 % palm kernel cake (PKC). The birds were offered a commercial starter diet until 14 days of age and thereafter the experimental diets until 49 days of age. Body weight, weight gain and feed conversion ratio were measured weekly for both species. Apparent digestibility of the dry matter (DM), crude protein (CP) neutral detergent fibre (NDF) and energy were determined by total collection method.

Results and Discussion

Results from the first experiment showed that there was no significant differences in the dry matter, crude protein and amino acid digestibilities , due to the type of PKC. The average ME value of PKC was found to be 1870 kcal/kg, which was higher than that reported for broiler chickens. Results from the second experiment showed that inclusion of PKC at 15% did not depress growth performance or FCR. However, at 35% there were increases in feed intake with subsequent decrease in feed efficiency. Digestibility of dry matter, crude protein and energy were significantly decresed when PKC was fed at 35% level (78.7, 77.4 and 74.3 %, for dry matter, 76.8, 74.2 68.5 % for protein, and 79.8, 79.5 and 76.8 for energy, respectively). In general, this study showed that males had higher digestibility of nutrients than females. However, the digestibility of ADF, NDF and hemicellulose were not significantly different between the diets.

In experiment 3, differences in the feed efficiency and nutrient digestibility was found between ducks and chickens. Feeding 25 % PKC to ducks did not affect feed efficiency or growth performance. The results showed that at 49 days of age ducklings had significantly ($p<0.05$) higher body weights, feed intakes and weight gains than broiler chickens. Digestibility of DM, CP , NDF and energy were significantly ($p<0.05$) higher in ducklings than in broiler chickens (79.6 % and 76.2 %; 78.2 % and 70.9 %; 59.8 % and 54.5 %; 83.0 % and 79.3 %. for ducklings and chickens, respectively). Inclusion of PKC significantly ($p<0.05$) reduced digestibility of DM, CP and energy. However, digestibility of NDF were increased in diets containing PKC in both ducklings and chickens.

Conclusions

It can be concluded that ducks can be fed PKC at levels up to 35 % without deleterious effects on their performance. However, the addition of palm oil as a source of energy to compensate for the lower inclusion of corn in the diets fed high levels of PKC. This study also showed that ducks are more able to tolerate high levels of PKC and that they are better digester that chickens as indicated by the higher digestibility of nutrient including protein, fat and energy. The digestibility of ADF, NDF and hemicellulose were also higher in ducks than in chickens.

Benefits from the study

The results of this study can be guide to the feeding of PKC to ducks. While ducks are almost similar to chickens in their physiology and anatomy of the gastro-intestinal tract, differences in the ability to utilize nutrients were observed. Farmers tend to be wary when using PKC as an ingredient in their feed formulation as no proper research has been conducted on the feeding of PKC to poultry and ducks. The information obtained in this study is beneficial to both farmers and feedmillers.

Patent(s), if applicable:

Nil

Stage of Commercialization, if applicable :

Nil

Project Publications in Refereed Journals

1. Mustafa, **MF., A.R. Alimon,** I. Ismail, M. Hair-Bejo and W.M. Wan Zahari (2001). Effect of palm kernel cake on performance and nutrient digestibility of Muscovy ducks. Mal. J. Anim. Sci. 7(1): 63-68

2. Mustafa MF., and **AR Alimon** (1999) The effect of replacing corn with palm kernel cake in grower diet on the performance of muscovy ducks. Mal. J. Anim. Sci. Vol 5: 101-108.

3. Mustafa, **MF., A.R. Alimon,** I. Ismail, M. Hair-Bejo and W.M. Wan Zahari (2001). Effect of palm kernel cake on performance and nutrient digestibility of Muscovy ducks. Mal. J. Anim. Sci. 7(1): 63-68

Project Publications in Conference Proceedings

Graduate Research

Name of Graduate	Research Topic	Field of Expertise	Degree Awarded	Graduation Year
Mustafa Fadil Mohamed	Utilisation of palm kernel cake in muscovy ducks	Poultry Nutrition	Ph.D.	2003

IRPA Project number01-02-04-0510
UPM Research Cluster:AFF
Project Leader Abd. Razak bin Alimon