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# Utilization of Cassava Dried Meal in Native Chicken Ration

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***Abstract:*** Cassava usage in human consumption has declined dramatically and fluctuation of market price is incredibly high every year. Cassava Dried Meal (CDM) are rich in carbohydrates, but low in protein, amino acids and thus used mainly as a source of energy in livestock and poultry feed. An on farm trial was conducted to assess the feeding value of CDM in native chicken replacing broken rice. The trial was conducted where native chicken are reared in intensive system of management with farm capacity of 500 birds. Birds were separated at random into two equal groups wherein one group fed with CDM and another was control group fed with broken rice. CDM was included in the ration at 10 per cent level replacing broken rice. The daily feed intake, weight gain, and livability were recorded. At the end of 90 days, the average body weight was 1.17 kg per bird in CDM group and 1.15 kg in broken rice group. The feed conversion ratio was 3.74 in CDM group and 3.83 in broken rice group. The livability was insignificant between broken rice group (96.2 per cent) and CDM (95.7 per cent). The cost of production per kg live weight was Rs. 109 in CDM group and 115 in broken rice group. The results revealed that, performance of CDM fed group and broken rice fed group were comparable, however CDM incorporation in native chicken ration could be more cost-effective when the market price of CDM is lower than the broken rice.

***Key Words:*** *Cassava Dried Meal, Native Chicken, Broken Rice*

## I. INTRODUCTION

Cassava was introduced in India during the later part of the 18th century. Today, in India Cassava is grown over an area of about 3 lakh hectares, with a production of 58 to 60 lakh tonnes of tubers. Though Kerala ranks first in cultivation and production in the country Tamil Nadu stands first in respect of processing of Cassava into starch and sago and hence this crop has now acquired a status of one of the important commercial crops in the State. But, farmers face so many problems in production and marketing of Cassava. The price fluctuation is an important problem in marketing of Cassava (Chandra, 2013). Sometimes price of the Cassava is increased (In 2013 the price of Cassava per bag was Rs. 500 to 800) and sometimes it is reduced (In 2012 the price per bag was Rs.150). When the price of Cassava considered for human consumption is less in the market, thus it is necessary to find the other alternative marketing channels like incorporation in livestock and poultry feed to minimize the economic losses incurred by Cassava producing farmers.

Rearing of native chicken is an imperative farming practice in improving farmer's income in rural area. Market demand of the product (meat and egg) is high, encouraging farmers to rear native chicken intensively and market the native chickens at 90 days onwards for meat. In semi-intensive and intensive system of native chicken production, feed cost is principal cost encompassing more than 75 per cent, of which dietary energy sources occupy the greatest portion (Van der Klis *et al*, 2010). Therefore, feed should be wisely formulated to gain efficient and economic utilization. A majority of the farmers are using cereal grain like broken rice as a source of energy which helps them to minimize the feed cost. CDM is a locally available rich source of carbohydrate and it can be used safely in broiler diets instead of using cereal grains (Akintala *et al*, 2002). Considering this fact and with an effort to minimize the economic loss prevailing during market fluctuation, this present study was conducted to assess the feeding value of CDM in native chicken ration replacing broken rice.

## II. MATERIALS AND MATHODS

Five hundred day old chicks of native chicken were divided randomly into two groups. One group fed with CDM as treatment group and another group as control fed with broken rice

based ration. The birds were reared under deep litter system from day one to ninety days. Brooding management was adopted for three weeks and all the birds were vaccinated as per the standard vaccination schedule.

Freshly harvested Cassava tubers were cleaned by removing dust, sand or any other foreign materials attached, and then they were chopped into thin slices and dried in the sun light for 3 days (Fig. 1) to eliminate anti-nutritive factors like hydrocyanic acid (HCN). HCN and other deleterious substances are may present in Cassava (Reed *et al*, 1982; Piva, 1987; Hughes and Choct, 1999). Sun drying, heating and or soaking in water for 3-5 days eliminates 80-95 per cent of cyanide in Cassava tubers (Oke, 1978). After sun drying, Cassava dried meal was prepared by grinding of the Cassava slices in hammer mill (Fig. 2). The ground Cassava dried meal (CDM) was used in formulating diets at 10 per cent level replacing broken rice (Table 1). Table 2 reveals the composition of the treatment and control group diet.

Figure 1: Cassava Tuber Slices Ready For Drying

Figure 2: Ground Cassava Dried Meal

Feed and water were provided *ad lib* for both the groups from 0 day to 90 days. During the experimental period, daily feed intake, mortality and weekly weight gain were recorded. At the end of 90 days, thirty birds from each group were randomly selected, weighed and cost of production was calculated. The feed conversion ratio was calculated as the ratio of the feed consumed to the weight gained as follows:

$$\text{Feed conversion ratio (FCR)} = \frac{\text{Amount of feed consumed (kg)}}{\text{Body weight gain (kg)}}$$

Table 1: Percentage composition of native chicken ration containing Cassava dried meal and broken rice

| **Ingredients** | **Treatment group (Cassava dried meal)** | **Control group (Broken Rice)** |
|---|---|---|
| Maize | 38 | 38 |
| Bajra | 10 | 10 |
| Broken rice | - | 10 |
| Cassava Dried Meal (CDM) | 10 | - |
| Soya bean meal | 23 | 23 |
| Fishmeal | 05 | 05 |
| Rice bran | 10 | 10 |
| Dicalcium phosphate | 01 | 01 |
| Calcite | 01 | 01 |
| Mineral mixture | 2.0 | 2.0 |
| Total | 100 | 100 |

Table 2: Composition of the treatment and control group diets

| **Components (%)** | **Treatment group (Cassava dried meal)** | **Control group (Broken Rice)** |
|---|---|---|
| Dry matter | 90.3 | 90.7 |
| Moisture | 9.7 | 9.3 |
| Crude protein | 18.22 | 18.77 |
| Crude fibre | 3.22 | 2.99 |
| Sand and Silica | 1.11 | 0.80 |
| Ether Extract | 2.35 | 2.49 |
| Nitrogen free extract* | 65.40 | 65.65 |
| Metabolizable energy (kcal/kg)* | 2582 | 2573 |

*Calculated values

## III. RESULTS AND DISCUSSION

The results of gross response of native chicken in terms of feed intake, live weight and feed conversion ratio, livability and benefit cost ratio are shown in table 3.

Table 3: Performance parameters of Native chicken fed diets containing Cassava Dried meal and broken rice.

| Parameters | Treatment group (Cassava dried meal) | Control group (Broken Rice) |
|---|---|---|
| Inclusion level (%) | 10 | 10 |
| Cost per kg (Rs) | 09 | 14 |
| Avg. Body weight per bird at 90 days (kg) | 1.17[a] ± 0.15 | 1.15 [a] ± 0.28 |
| Avg. feed intake (g/day) | 48.6 [a] ± 1.65 | 48.9 [a] ± 2.07 |
| Feed conversion ratio | 3.74 [a] ± 0.09 | 3.83 [a] ± 0.07 |
| Livability (%) | 95.7 [a] ± 3.59 | 96.2 [a] ± 2.85 |
| Production cost per kg live weight (Rs) | 109.3 [a] ± 6.05 | 115.5 [a] ± 5.15 |
| Benefit cost ratio | 1.55 [a] ± 0.95 | 1.47 [a] ± 0.73 |

*# Same superscript in a row do not differ significantly*

### *A. Live Weight*

In this present study, average body weight per bird at 90 days of age in CDM fed group was comparable with broken rice fed group. Literatures pertaining to study on feeding value of Cassava in native chicken are very scanty; most of the studies were conducted in broiler and layers. Dietary supplementation of Cassava meal did not affect notably on the meat yield characteristics and live weight of broiler chickens (Awojobi and Adekunmi, 2002).

### *B. Feed Intake*

Average feed intake of native chicken on CDM fed group and broken rice fed group were found to be similar statistically. Inclusion of CDM in native chicken ration did not affect the palatability of the feeds and feed consumption. The similar findings reported in broilers by Hossain *et al*, 2013.

### *C. Livability*

The present study results revealed that, the livability per cent in CDM fed group and broken rice fed group did not differ significantly. Earlier findings reported that Cassava meal did not cause any fatal effect to boiler chicken (Akintala *et al*, 2002), and can be used safely in broiler diets instead of cereal grains.

### *D. Production Cost and Benefit Cost Ratio*

In present study, Production cost per kg live weight and benefit cost ratio were numerically better in CDM fed group than broken rice fed group. Similar reports were reported earlier also.

## CONCLUSION

Present study results indicated that Cassava Dried Meal (CDM) is a valuable non-conventional feed ingredient that could be used in native chicken ration replacing broken rice. However, CDM incorporation in native chicken ration could be more cost-effective when the market price of CDM is lower than the broken rice.

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