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## Importance of Jamun (*Syzygium cumini*) seeds in broiler feed for relative organ weights

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### Abstract

Day old chicks (two hundred and forty) were randomly distributed into four groups of 5 replicates and offered four isocaloric and isonitrogenous diets for 42 days. Test diets were prepared with inclusion of nonconventional feed Jamun (*Syzygium cumini*) seeds at 0.5%, 1% and 1.5%, respectively in T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub> groups. Diet without Jamun seeds served as the control diet. All standard practices were adopted while conducting the trial. In carcass characteristic study, relative organs weight results revealed no significant ( $p>0.05$ ) differences among different dietary treatment groups. So it is suggestive to include 1.5% Jamun seeds in broilers.

**Keywords:** Jamun seed, replicate, relative organs

### Introduction

*Syzygium cumini* is also known as *Syzygium jambolaneem*, *Eugenia cumini*, *Syzygium caryophyllum* and *Eugenia jambolana* etc. which is a medicinal plant and utilizable species. Each part of Jamun fruit holds its significant value. Whole fruit is used for extracting juice or to prepare jam, jelly, squash, etc. Whereas seeds are having their medicinal value for curing diarrhea and diabetes (Baliga *et al.*, 2013) [3]. In Ayurvedic medicine, 1-3 g of dried seed powder is usually given orally to humans to treat diabetic conditions. Different parts of Jamun have been used to cure blisters in mouth, colic, digestive complaints, diarrhea, dysentery, diabetes, pimples, piles, stomachache and cancer (Jain, 1991) [6].

Due to the shortage of feed, some attempts have been made to utilize locally available cheap by-products for the benefit of end users in reducing the feed cost which in turn can reduce the total cost of production of meat and egg and making them easily available in rural India (ICAR, 2014). Swain *et al.* (2005) [9] suggested that rice kani could replace 30% of maize in the diet of growing Vanaraja chicks for better economics of production in coastal climate.

The effect of brewers' dried grain on the performance and carcass characteristics was studied in Vanaraja chicks from 4<sup>th</sup> week to 9<sup>th</sup> week of age and concluded for incorporation up to 20% in the diet without affecting growth performance. Same level of its inclusion was also recommended in Rhode Island Red (RIR) chicks from 1<sup>st</sup> day to 8 weeks of age without any adverse effect on productive performance (Swain *et al.*, 2012) [8].

Baba *et al.* (2014) [2] found that the broiler group fed 0.5% Jamun seeds for 6 weeks had no significant difference ( $p\geq 0.05$ ) in liver weight (3.61%) than the control group (3.04%) and 1% Jamun seeds fed group showed 3.34% as liver weight. All the results were found to be statistically non-significant. In another study, Ndyomugenyeni *et al.* (2016) [7] observed that the broiler group fed 8% Jamun seeds for 6 weeks had no significant difference ( $p\geq 0.05$ ) in liver weight (32.1 g) than the control group (35.7 g).

### Materials and Methods

A standard broiler-pre-starter, broiler-starter and broiler-finisher rations were formulated with conventional feed ingredients (ICAR, 2013). Test diets formulated by addition of Jamun seed at three different levels (0.5% - T<sub>2</sub>, 1% - T<sub>3</sub> and 1.5% - T<sub>4</sub>). Control diet remained without jamun seed (Table 1 and 2). Hatched out chicks of two hundred and forty number were housed under deep litter system by diving in to twenty groups. Total of four diets were given *ad libitum* to five groups each. This trial was lasted for 42 days.

**Table 1:** Diet description for experimental birds

| Treatment      | Diet  |
|----------------|---|
| T <sub>1</sub> | Control diet                                  |
| T <sub>2</sub> | 0.5% Jamun seed inclusion in the control diet |
| T <sub>3</sub> | 1% Jamun seed inclusion in the control diet   |
| T <sub>4</sub> | 1.5% Jamun seed inclusion in the control diet |

**Table 2:** Ingredient composition of starter diet

| Ingredient          | T <sub>1</sub> | T <sub>2</sub> | T <sub>3</sub> | T <sub>4</sub> |
|---------------------|----------------|----------------|----------------|----------------|
| Maize               | 54.50          | 54.40          | 53.80          | 53.50          |
| Soyabean meal       | 37.00          | 36.70          | 36.90          | 36.80          |
| Vegetable oil       | 4.30           | 4.20           | 4.10           | 3.90           |
| Jamun seed          | 0              | 0.50           | 1.00           | 1.50           |
| Mineral mixture*    | 1.50           | 1.50           | 1.50           | 1.50           |
| Dicalcium phosphate | 1.35           | 1.50           | 1.50           | 1.50           |
| Salt                | 0.38           | 0.38           | 0.38           | 0.38           |
| Vitamin premix**    | 0.20           | 0.20           | 0.20           | 0.20           |
| DL-Methionine       | 0.48           | 0.48           | 0.48           | 0.48           |
| Lysine              | 1.20           | 1.20           | 1.20           | 1.20           |
| Choline chloride    | 0.10           | 0.10           | 0.10           | 0.10           |
| Total               | 99.97          | 100.04         | 100.04         | 100.02         |
| ME (Kcal/kg)        | 3068.65        | 3068.94        | 3064.37        | 3054.75        |
| Crude protein (%)   | 21.55          | 21.44          | 21.51          | 21.47          |
| Calcium (%)         | 2.01           | 2.02           | 2.01           | 2.01           |
| Phosphorous (%)     | 0.61           | 0.61           | 0.61           | 0.61           |
| Lysine (%)          | 1.15           | 1.05           | 1.15           | 1.15           |
| Methionine (%)      | 0.50           | 0.51           | 0.50           | 0.50           |

- Mineral mixture: Each 100 g contains Magnesium oxide - 1.48 g, Ferrous sulphate - 6.0 g, Manganese sulphate - 0.04 g, Copper sulphate - 0.05 g, Potassium iodide - 0.001 g, Potassium chloride - 17.09 g and Sodium selenite - 0.001 g.
- \*\* Vitamin Premix: Each 100 contains Vitamin AD3 (Vitamin A-10,00,000 IU/g, Vitamin D- 2,00,000 IU/g) - 0.165 g, Vitamin E - 2.4 g, Vitamin K3 - 0.103 g, Pyridoxine hydrochloride - 0.309 g, Thiamine mononitrate 0.206 g, Riboflavin - 0.513 g, Cyano cobalamine - 0.00031 g, Folic acid - 0.103 g, Niacin - 4.124 g, Ca-D-Pantothenate - 1.031g, Biotin - 1.5 g, Maltodextrine - 89.545 g.

At the end of the trial, two birds from each replicate were selected and slaughtered as per the standard protocol. Visceral organ weights viz., heart, liver and gizzard were recorded and expressed in terms of a gram percent (g/100 g).

## Results and Discussion

### Relative organ weights

The values of mean relative weights of gizzard on 42<sup>nd</sup> day of trial for various dietary treatment groups was 1.83 in control group (T<sub>1</sub>), 1.85 percent in 0.5 percent Jamun seed fed group (T<sub>2</sub>), 1.92 percent in 1 percent Jamun seed fed group (T<sub>3</sub>) and 1.91 percent in 1.5 percent Jamun seed fed group (T<sub>4</sub>). Statistical analysis revealed no significant ( $p>0.05$ ) difference among different dietary treatment groups.

The mean relative weights of heart in different dietary treatment groups on day 42 was 0.50 in control group (T<sub>1</sub>), 0.48 in 0.5 percent Jamun seed fed group (T<sub>2</sub>), 0.59 in 1 percent Jamun seed fed group (T<sub>3</sub>) and 0.45 in 1.5 percent Jamun seed fed group (T<sub>4</sub>). Statistical analysis revealed no significant ( $p>0.05$ ) difference among different dietary treatment groups.

The mean relative weights of liver in different dietary

treatment groups at 42<sup>nd</sup> day was 2.10 in control group (T<sub>1</sub>), 2.12 in 0.5 percent Jamun seed fed group (T<sub>2</sub>), 1.99 in 1 percent Jamun seed fed group (T<sub>3</sub>) and 2.05 in 1.5 percent Jamun seed fed group (T<sub>4</sub>). Statistical analysis revealed no significant ( $p>0.05$ ) difference in relative weights of liver among different dietary treatment groups.

The results of heart weights are in disagreement with Ndyomugenyi *et al.* (2016) [7] who observed significantly lower value at high java plum seed meal inclusion in broiler diet. However, other results are in agreement with this work.

## Conclusion

Trial suggested to include 1.5% Jamun seeds in commercial broilers.

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