

Original Research Article

<https://doi.org/10.20546/ijcmas.2024.1310.016>

Effect of Supplementation of Poha Mill Waste on Dressing Percentage, Sensory and Economics of Grampriya Poultry Birds

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ABSTRACT

A study was conducted for the estimation of Effect of Supplementation of poha Mill Waste on Dressing percentage, sensory and economics of Grampriya Poultry birds. The average dressing percentage among different treatment groups varied between 68.21% and 70.75%. A significant difference found among all the treatment groups. The maximum dressing yield was observed in T₃ bird fed 10% PMW (70.75%), followed by T₂ i.e. 5% PMW (69.31), T₄ i.e. 15% PMW (69.18) and lowest dressing yield i.e. 68.21% was found in control. Sensory scores for appearance and colour, tenderness, flavour, juiciness, texture and overall acceptability for the 10 per cent Poha Mill Waste group were higher than the other group. statistically no significant (P<0.05) difference was noticed between the treatments for different parameters viz., appearance and colour, flavor and and overall acceptability However, statistically shows significant (P<0.05) difference was noticed between the treatments for different parameters viz., tenderness, juiciness and texture. The maximum overall acceptability was observed in T₃ bird fed 10% PMW (8.76), followed by T₄ i.e. 15% PMW (8.34), T₂ i.e. 5% PMW (8.23) and lowest i.e. 7.95 was found in control. The net cost of production per bird was Rs. 176.68, 173.12, 173.64 and 179.30 for treatment groups T₁, T₂, T₃ and T₄ respectively. By considering the selling price of broilers at Rs.150 per kg on live body weight basis, the net profit per kg were Rs. 26.94, 38.43, 62.38, and 40.42 for the treatment T₁, T₂, T₃ and T₄.

Keywords

Dressing percentage, sensory, economics, Poha Mill Waste, Grampriya poultry

Article Info

Received:

20 August 2024

Accepted:

28 September 2024

Available Online:

10 October 2024

Introduction

The poultry market in India is expected to be worth INR 2,099.2 billion by 2023. Looking ahead, IMARC Group estimates the market to reach INR 4,620.7 billion by 2032, with a compound annual growth rate (CAGR) of 8.9% from 2024 to 2032. Development of high yielding layer (310-340 eggs) and broiler (2.4-2.6 kg at 6 weeks).

The yearly per capita availability grew to 101 eggs and 3.2 kg of beef, in line with productivity increases. Gramapriya is more popular in areas with increased egg consumption and more predator threat due to its medium body weight and high egg production capacity. Male Gramapriya are well suited for producing Tandoori chicken dishes. Females in rural or tribal communities lay a large number of eggs in semi-intensive farm

settings (Singh *et al.*, 2011). In chicken farming, feed contributes for 70% of the recurring expenditure. Maize is the primary cereal grain used in chicken feeds, and production and logistics expenses have boosted maize prices, particularly during off-season periods (Moura *et al.*, 2010). Flaked or beaten rice is an extremely popular traditional product in India and other rice-consuming cultures. This product is eaten as a snack after toasting or frying and spicing or after soaking in water and flavouring with spices and veggies (Ananthachar *et al.*, 1982).

Materials and Methods

The present study on “To study Effect of Supplementation of Poha Mill Waste on Performance of Grampriya Poultry Birds.” Was carried out at Poultry unit, College of Agriculture, Latur for a period of 10 weeks (70 days) from 2nd June to 10th august 2023. All the experimental Grampriya chicks were reared for 70 days on deep litter system in a well-ventilated shed. Proper brooding of chicks was done by providing sufficient heat by using electric bulbs for first three weeks of age.

The standard temperature of brooding was 32-35°C for first week. A weekly reduction of 3°C was done till brooding temperature reaches to 27°C by third week of age. The chicks were equally and randomly distributed into four treatment groups. Each treatment groups were further divided into three replicates with fifteen chicks in each replicate. These chicks were reared on deep litter system in pens upto 10 weeks of age. The rice husk was used as litter material.

Observations Recorded

Dressing percentage

Carcass traits were examined at the end of ten weeks. The birds were fasted for a period of 12 hours prior to slaughter. Three birds from each treatment i.e. one birds from each replicate were randomly selected at the end of 10th week of age and slaughtered using the standard procedure.

The live weights of the birds were recorded before slaughter. The dressed weight of each group was obtained separately after complete bleeding and removal of feathers, viscera, head and legs by keeping the skin

intact with the carcass. The dressing percentage, Giblet, abdominal fat and breast meat yield were expressed as % of live weight. The following observations were made on different measurement of carcass and cut-up parts.

Live weight

Birds were weighted before slaughtering using an electronic balance

Dressed weight

After slaughtering, the dressed birds were weighted and dressed weight was recorded to calculate dressing percentage.

$$\text{Dressed weight (\%)} = \frac{\text{Dressed bird weight (g)}}{\text{Live weight of bird (g)}} \times 100$$

Eviscerated weight

Weight of carcass along with giblets and skin.

$$\text{Eviscerated weight (\%)} = \frac{\text{Eviscerated weight (g)}}{\text{Live weight of bird (g)}} \times 100$$

Edible weight

Weight of carcass without non eviscerated weight.

$$\text{Edible weight (\%)} = \frac{\text{Edible weight (g)}}{\text{Live weight of bird (g)}} \times 100$$

Giblet weight

Weight of heart, liver and gizzard.

$$\text{Giblet weight (\%)} = \frac{\text{Giblet weight (g)}}{\text{Live weight of bird (g)}} \times 100$$

Non-edible weight

The eviscerated weight with weight to giblet accounts for edible weight while weight of blood, feathers, offal's, head and shank comprise of non-edible weight.

Weight of carcass cutup parts (g)

Neck, Back, Wing, Breast, Drumstick, Thigh, Head and Leg weight constitutes carcass cutup parts.

Sensory evaluation of meat

To judge the consumer awareness of chicken quality, a sensory panel of semi trained judges drawn from staff were requested to evaluate the product for different quality attributes viz. appearance, texture, juiciness, flavour and overall acceptability as given in score sheet.

The sensory quality of samples was evaluated using 9-point hedonic scale, where 9 denoted extremely desirable and 1 denoted extremely poor. The meat cubes of ½ inch were prepared from the meat samples. One per cent salt was added to each sample and cooked in pressure cooker for 15 minutes. After cooking, the samples were cooled to room temperature and the fluid portion was discarded, before serving the product to judge. The following scale is used to categorize the respondents.

Economics

During this study, an attempt was made to calculate the economics of broiler production from different treatment groups. The economics of broiler production of the experiment was worked out by considering the prevailing prices of input and output in the market. The cost of day-old chick, feed, medication, vaccination, litter and other overheads were considered while calculating the cost of production. All other cost components of production i.e. cost of chick, medicines, vaccine and other overhead were taken as constant for all the treatment groups. Gross profit per bird was calculated by subtracting the cost of production per bird from the price fetched per bird after selling it in the local market on live weight basis.

Results and Discussion

1. Sensory by organoleptic evaluation

2. Dressing percentage
3. Economics

Sensory by organoleptic evaluation

The effect of Poha mill waste in diet of chickens on organoleptic evaluation of chicken was shown in Table 3. The overall acceptability at ten week for treatment T₁, T₂, T₃ and T₄ were 7.95, 8.23, 8.76 and 8.34, respectively. Sensory scores for appearance and colour, tenderness, juiciness, texture and overall acceptability for the 10 per cent poha mill waste group were higher than the other group. statistically no significant (P<0.05) difference was noticed between the treatments for different parameters viz., appearance and colour, flavor and overall acceptability. However, statistically shows significant (P<0.05) difference was noticed between the treatments for different parameters viz., tenderness, juiciness and texture.

Dressing percentage

The average dressing percentage in all treatment groups is presented in Table 4. The average dressing percentage among different treatment groups varied between 68.21 and 70.75%. A non-significant difference found among all the treatment groups. The maximum dressing yield was observed in bird fed 10 % poha mill waste (70.75%), followed by 5% Poha mill waste (69.31) and 15% poha mill waste (69.18) lowest dressing yield i.e. 68.21% was found in control.

Economics

The economics of broiler production in all treatment groups is presented in Table 5. From this table, it is observed that net cost of production per bird was Rs.176.68, 173.12, 173.64 and 179.30 for treatment groups, T₁, T₂, T₃ and T₄ respectively. By considering the selling price of broilers at Rs.150 per kg on live body weight basis, the net profit per kg were Rs. 26.94, 38.43, 62.38, and 40.42 for the treatment T₁, T₂, T₃ and T₄. Comparatively it is observed that higher profit per kg of broiler was in treatment T₃ (ration containing 10% poha mill waste) as Rs. 62.38/- followed by treatment T₄ ration containing 15% poha mill waste as Rs. 40.42/-, treatment T₂ (ration containing 5 % poha mill waste as Rs. 38.43/- and lower in control treatment i.e. T₁ as Rs. 26.94/-.

Table.1 Treatment Group details

Treatment Groups	Treatment Group details	No. of replication	No. of birds/ replication	Total number of birds
T ₁	Control(Standard ration)	03	15	45
T ₂	95% Carbohydrate from Standard ration+5 % Carbohydrate from Poha mill waste	03	15	45
T ₃	90% Carbohydrate from Standard ration+10 % Carbohydrate from Poha mill waste	03	15	45
T ₄	85% Carbohydrate from Standard ration+15 % Carbohydrate from Poha mill waste	03	15	45
Total numbers of birds				180

Table.2 Description of the scale to test sensory qualities of meat

Sr.No.	Scale	Score
1	Very desirable	9
2	Desirable	8
3	Moderately desirable	7
4	Slightly desirable	6
5	Neither desirable	5
6	Slightly undesirable	4
7	Moderately undesirable	3
8	Undesirable	2
9	Very undesirable	1

Table.3 Effect of supplementation of Poha mill waste on organoleptic characteristics of chicken

Parameter	Organoleptic Characteristics					
	Appearance & Colour	Tenderness	Flavour	Juciness	Texture	Overall acceptability
T ₁	7.79	8	7.32	7.59	7.99	7.95
T ₂	7.84	7.99	7.56	7.61	8.2	8.23
T ₃	8.12	8.15	8.01	7.66	8.28	8.76
T ₄	7.66	8.04	7.53	7.62	8.16	8.34
Mean SE	2.61	2.68	2.53	2.54	2.71	2.78
CD @ 5%	NS	NS	NS	NS	NS	NS

Table.4 The dressing percentage of birds in different treatments

Carcass traits (%)	Treatments				Mean SE	CD @ 5%
	T ₁	T ₂	T ₃	T ₄		
Live body weight	1357.5	1410.36	1573.52	1464.81	12.58	S
Weight after deblooding	1299.5	1350.36	1514.52	1404.81	11.69	NS
Dressing weight	925.95	977.52	1113.26	1013.35	0.52	NS
Dressing (%)	68.21	69.31	70.75	69.18	18.11	NS
Thigh (%)	15.08	15.47	15.19	15.38	0.08	NS
Wing (%)	8.03	8.52	8.06	8.8	0.18	NS
Drumstick (%)	14.4	14.55	15.08	14.47	0.15	NS
Breast (%)	22.35	22.26	23.28	22.57	0.23	NS
Giblet (%)	5.28	5.46	6.01	5.59	0.15	NS
Neck (%)	3.07	3.05	3.13	2.37	0.17	NS
Edible (%)	68.21	69.31	70.75	69.18	0.52	NS
Non edible (%)	31.79	30.69	29.25	30.82	0.52	NS

Table.5 The economics of birds in different treatments

Sr. No	Particulars	Treatments			
		T ₁	T ₂	T ₃	T ₄
1	Cost of Day old chicks (Rs)	25	25	25	25
2	Poha waste consumed per bird (kg)	0	0.117	0.236	0.354
3	Cost of poha waste (Rs/g)	0	20	20	20
4	Cost of Consumed poha waste (Rs)	0	2.34	4.72	7.09
5	Average total feed consumed per bird (g)	2395.84	2370.19	2362.67	2364.03
6	Cost of feed (Rs/Kg)	40	40	40	40
7	Cost of feed consumed per bird (Rs)	95.80	94.80	94.48	94.56
8	Total cost of feed with + poha waste per bird	95.8	97.14	99.2	101.65
9	Avg. Body weight gain at the end of 10th week (g)	1357.5	1410.36	1573.52	1464.81
10	Cost of medicine, vaccine and litter material per bird (Rs)	10	10	10	10
11	Cost of Production Per bird (Rs)	130.80	132.14	134.20	136.65
12	Avg. Price realized @ Rs 150 Per kg live weight (Rs)	203.55	211.50	235.95	219.6
13	Net profit per bird Rs.	72.75	79.36	101.75	82.95

Sensory Evaluation

Sensory scores for appearance and colour, tenderness, flavour, juiciness, texture and overall acceptability for the 10 per cent Poha Mill Waste group were higher than the other group. However, statistically nosignificant (P>0.05) difference was noticed between the treatments for tenderness, flavour, juiciness, texture and overall acceptability was noticed between the treatments for

appearance and colour. The maximum overall acceptability was observed in T₃ bird fed 10% PMW (8.76), followed by T₄ i.e. 15% PMW (8.34), T₂ i.e. 5% PMW (8.23) and lowest i.e. 7.95 was found in control.

Dressing percentage

The average dressing percentage among different treatment groups varied between 68.21% and 70.75%. A

significant difference found among all the treatment groups. The maximum dressing yield was observed in T₃ bird fed 10% PMW (70.75%), followed by T₂ i.e. 5% PMW (69.31), T₄ i.e. 15% PMW (69.18) and lowest dressing yield i.e. 68.21% was found in control.

Economics

The net cost of production per bird was Rs. 130.80, 130.94, 134.20 and 136.65 for treatment groups T₁, T₂, T₃ and T₄ respectively. By considering the selling price of broilers at Rs.150 per kg on live body weight basis, the net profit per kg were Rs. 72.75, 80.06, 101.75 and 82.95 for the treatment T₁, T₂, T₃ and T₄.

Author Contributions

S. L. Barkade: Investigation, formal analysis, writing—original draft. D. S. Chauhan: Validation, methodology, writing—reviewing. B. S. Gaikwad:—Formal analysis, writing—review and editing. S. B. Sutar: Investigation, writing—reviewing. A. G. Dabhekar: Resources, investigation writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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How to cite this article:

Barkade Sangram Laxman, D. S. Chauhan, B. S. Gaikwad, S. B. Sutar and Dabhekar, A. G. 2024. Effect of Supplementation of Poha Mill Waste on Dressing Percentage, Sensory and Economics of Grampriya Poultry Birds. *Int.J.Curr.Microbiol.App.Sci*. 13(10): 116-121. doi: <https://doi.org/10.20546/ijcmas.2024.1310.016>