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Evaluation of carcass traits in Vanaraja male line (PD-1)

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Abstract
The study was carried out to evaluate the carcass quality traits in Vanaraja male line (PD-1) chicken. Different carcass quality parameters expressed as percentage of pre slaughter live weight in Vanaraja male line (PD-1) cocks slaughtered at 15 weeks of age. In the present study, the average pre-slaughtered live weight was 1905±55.79 g. The mean dressing percentage (DP) was 75.14±0.67 and the proportions of cut up parts expressed as percentage of pre slaughter live weight of breast, leg, wing, back and neck were16.42±0.30, 22.82±0.31, 10.39±0.19, 15.29±0.29 and 5.36±0.16, respectively. Blood, feather, head, heart, liver, gizzard, abdominal fat, bursa and spleen are expressed as percentage of pre slaughter live weight were 4.07±0.14, 3.73±0.28 , 3.55±0.09, 0.45±0.01, 1.81±0.06, 2.06±0.05, 0.09±0.03, 0.05±0.00 and 0.18±0.00, respectively.

Keywords: Vanaraja male line, PD-1, carcass quality traits, dressing percentage

Introduction
Vanaraja birds exhibits both good egg production and impressive meat characteristics. Among its many attributes, slaughter traits play a crucial role in determining the bird's commercial value, particularly in meat production systems.
Slaughter traits refer to the physical and biological characteristics of a bird that influence meat yield and quality at the time of slaughter. These include body weight at slaughter, dressing percentage, carcass weight, organ weight, meat-to-bone ratio, and fat deposition. Evaluating these traits helps in understanding the breed's potential for meat production, guiding both farmers and breeders in optimizing their rearing practices for better economic returns.
The study of slaughter traits in Vanaraja chickens not only highlights their suitability for backyard poultry systems but also provides insights into how they compare with commercial broilers and indigenous breeds. These insights are essential for improving productivity, ensuring better utilization of genetic potential, and contributing to rural livelihoods.

Material and Methods
The study was conducted at ICAR-Directorate of Poultry Research, Hyderabad, Telangana, India.

Experimental Birds and Management
The experiment was conducted using twenty Vanaraja PD-1 male line males**,** all aged 15 weeks at the time of slaughter. The birds were randomly selected from a uniform, healthy population reared under standardized management and nutritional conditions**.** To facilitate accurate carcass trait evaluation, the birds were subjected to a 12-hour feed withdrawal period prior to slaughter, allowing for complete evacuation of the gastrointestinal tract. During this fasting period, clean drinking water was made available ad libitum to prevent dehydration.

Live Weight Measurement and Slaughter Procedure
At the end of the fasting period, live body weights of the birds were individually recorded using a digital weighing. The birds were then slaughtered using the Halal method, which involved severing the jugular vein and carotid artery with a sharp knife, ensuring a swift and humane death in compliance with ethical slaughter practices. The birds were allowed to bleed out for 1.5 to 2 minutes post-slaughter.

Scalding and De-feathering

Carcasses were scalded in hot water at 55 °C for 2 minutes to loosen feathers. The birds were then manually de-feathered, and the de-feathered body weight was recorded immediately after.

Dressing and Evisceration

Dressing was carried out by removing the head and shanks. The dressed weight was recorded after this step. Evisceration was performed by making a slit in the abdominal region to carefully extract internal organs. The oesophagus and trachea were removed by incising the neck region, and another incision was made below the breastbone to remove the entire viscera. The eviscerated carcass weight was documented following removal of all internal contents.

Heart, liver and gizzard were separated and cleaned. Pericardium of heart, gallbladder of liver, and internal layer of gizzard lining were removed before weighing them separately to record their weight individually and also weight them together to record giblet weight.

These three organs (heart, liver, and gizzard) were also weighed collectively to determine the total giblet weight. All weights were recorded using a digital scale and expressed both in absolute terms (g) and as a percentage of live body weight.

The following carcass and organ components were evaluated: Blood loss, Feathers, Head, Dressed carcass, Legs, Wings, Back Neck, Giblets (heart, liver, gizzard), Bursa of Fabricius, Spleen and Abdominal fat. All measurements were expressed as relative weights (% of live body weight)

Statistical analysis

Data were entered into Microsoft Excel and analyzed using SPSS software**.** Mean values and standard error were calculated for each parameter.

Results and Discussion

All carcass quality traits were obtained from Vanaraja male line (PD-1) cocks at 15th weeks of age. The pre-slaughter body weight of the male was 1905±55.79 g, which seems to be appropriate for the backyard poultry (Table 1). Lower pre-slaughter body weight at 16 weeks of age was found in PD1 x IWI x PD3 cross than the present study as reported by Padhi *et al.* (2016) [6] and also in PD1 and Vanaraja at 12 weeks of age as reported by Padhi *et al.* (2015) [5]. Higher pre-slaughter body weight at 18 weeks of age in different two-way crosses was reported by Padhi and Chatterjee (2013) [4].

In the present study, the mean percentage of breast was 16.42±0.30. Which is lower that was reported by Chatterjee *et al.* (2003) [1] in Nicobari. However Yadav *et al.* (2009) [7] in backyard chicken at 16 weeks of age and Chatterjee *et al.* (2007) [2] reported a lower value in two different Nicobari cross males at 24 weeks of age than in the present study. The mean percentage of leg recorded in the present study was 22.82±0.31. Yadav *et al.* (2009) [7] reported a lower value than in the present study in backyard chicken at 16 weeks of age, while slightly lower value was reported by Chatterjee *et al.* (2003) [1] in Nicobari and Chatterjee *et al.* (2007) [2] in two Nicobari cross males at 24 weeks of age.

The mean percentage of wing was 10.39±0.19 in PD1 males at 15 weeks ofage in the present study and was higher than those reported by Chatterjee *et al.* (2007) [2] in two different Nicobari cross males of 24 weeks of age and Yadav *et al.* (2009) [7] in backyard chicken at 16 weeks of age.

The mean percentage of back was 15.29±0.29 in the present study was higher than those reported by Chatterjee *et al.* (2003) [1] in Nicobari, Chatterjee *et al.* (2007) [2] in two different Nicobari cross males and Yadav *et al.* (2009) [7] in backyard chicken.

The mean percentage of neck was 5.36±0.16. The present findings higher than those reported by Yadav *et al.* (2009) [7] in backyard chicken. However, the mean recorded in the present study were slightly lower than those reported by Chatterjee *et al.* (2003) [1] in Nicobari, Chatterjee *et al.* (2007) [2] in two different Nicobari cross males.

The mean percentage of blood found in the present study was 4.07±0.14 (Table 1). Higher blood percentage than the present study were reported by Padhi and Chatterjee (2013) [4] in four different crosses (PD1xPD4, PD1xPB2, PD1xPD3 and PD1xIWI), Padhi *et al.* (2015a) [5] in Vanaraja, while lower values than present study were reported by Padhi *et al.* (2016) [6] in PD1 x IWI x PD3 cross males.

The mean feather percentage in the present study was 3.73±0.28. Lower feather percent than recorded in present study was reported by Padhi *et al.* (2012b) [3] PD1, Vanaraja and control broiler, where as higher feather percent than the present study were reported by Padhi and Chatterjee (2013) [4] in four different crosses, Padhi *et al.* (2015) [5] in Vanaraja and Padhi *et al.* (2016) [6] in PD1 x IWI x PD3 cross males.

The mean head percentage was 3.55±0.09. The present findings were comparable with the reports of Padhi *et al.* (2012) [3] in PD1, Vanaraja and control broiler and Padhi and Chatterjee (2013) [4] in four different crosses.

In the present study, mean percentage of heart, liver, gizzard, fat, bursa and spleen recorded in the present study were 0.45±0.01, 1.81±0.06, 2.06±0.05, 0.09±0.03, 0.05±0.00 and 0.18±0.01, respectively. Higher values than the present study were reported by Padhi *et al.* (2016) [6] in PD1 x IWI x PD3 cross males and Padhi and Chatterjee (2013) [4] in different four crosses.

Table 1: Means±SE of carcass quality traits in Vanaraja male line (PD-1) males at 15 weeks of age

S. No.	Trait	Mean ± S.E.
1	Live weight	1905±55.79
2	Dressing percentage	75.14±0.67
3	Breast	16.42±0.30
4	Leg	22.82±0.31
5	Wing	10.39±0.19
6	Back	15.29±0.29
7	Neck	5.36±0.16
8	Blood	4.07±0.14
9	feather	3.73±0.28
10	Head	3.55±0.09
11	Heart	0.45±0.01
12	Liver	1.81±0.06
13	Gizzard	2.06±0.05
14	Fat	0.09±0.03
15	Bursa	0.05±0.00
16	Spleen	0.18±0.01

Conclusion

This study concluded that Vanaraja male line birds exhibit a high dressing yield. This trait not only reflects efficient feed conversion and effective meat deposition but also indicates the breed's strong potential for enhancing meat production. These characteristics make the Vanaraja male line a suitable

option for improving productivity in backyard and semi-intensive poultry farming systems.

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