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Naveen Z
Assistant Professor, Department of Livestock Products Technology, College of Veterinary Science, Tirupati, Sri Venkateswara Veterinary University, Andhra Pradesh, India

Naik BR
Professor and Head. Department of Veterinary Physiology, College of Veterinary Science, Tirupati. Sri Venkateswara Veterinary University, Andhra Pradesh, India

Shakila S
Professor and Head. Department of Poultry Science, College of Veterinary Science, Tirupati, Sri Venkateswara Veterinary University, Andhra Pradesh, India

Correspondence
Assistant Professor, Department of Livestock Products Technology, College of Veterinary Science, Tirupati, Sri Venkateswara Veterinary University, Andhra Pradesh, India

Haematological parameters, carcass characteristics and technological meat quality attributes of rajasri chicken

Naveen Z, Naik BR and Shakila S

Abstract
A study has been designed to evaluate the hematological parameters, carcass characteristics and meat quality attributes of rajasri chicken. Irrespective of the sex, the mean (Mean ± S.E.) Hemoglobin content (g/dL) was 12.71 ± 0.51; Packed Cell Volume (%) was 44.13 ± 1.68. The White Blood Cells count was 27.22 ± 2.61 (10^3/µL), Red Blood Cells count was 3.21 ± 0.10 (10^6/µL). The Mean corpuscular volume, Mean corpuscular hemoglobin and Mean corpuscular hemoglobin concentration were 141.07 ± 1.84, 39.86 ± 0.74 and 28.32 ± 0.41 respectively. The platelet count (10^3/µL) was 65.11 ± 2.91. The study also revealed that average Lymphocytes (%) were 54.05 ± 1.92, Heterophils (%) were 36.58 ± 1.42, Basophils (%) were 3.14 ± 0.42, Monocytes (%) were 2.97 ± 0.51 and Eosinophils (%) were 3.95 ± 0.72. Significant (P<0.05) differences were found between male and female Rajasri chicken in some of the hematological parameters. The mean (Mean ± S.E.) pre-slaughter weight (g), Carcass weight (g) and dressing percentage in both sexes of Rajasri chicken were 1511.1 ± 24.17, 1093.29 ± 18.34 and 72.27 ± 0.54 respectively. Male Rajasri chicken weighed significantly (P<0.05) higher than female Rajasri chicken. The overall mean (Mean ± S.E.) Yields (%) of edible offal namely Liver, Gizzard, Heart and Giblets were 1.60 ± 0.02, 1.76 ± 0.02, 0.38 ± 0.02 and 3.73 ± 0.06 respectively. Significant (P<0.05) differences were found between male and female Rajasri chicken in yields (%) of edible offal. The Yields (%) (Mean ± S.E.) of inedible offals recorded were 2.51 ± 0.08, 5.47 ± 0.07, 2.95 ± 0.04, 2.66 ± 0.04 and 10.38 ± 0.04 for Blood, Feathers, Head, Feet and Viscera respectively. The overall mean weights (g) (Mean ± S.E.) of different cutup parts recorded in the present investigation were 80.53 ± 2.11, 141.62 ± 3.52, 282.84 ± 8.12, 249.04 ± 6.68, 175.8 ± 4.26 and 160.83 ± 3.44 respectively for Neck, Wings, Breast, Back, Thigh and Drumstick. Male Rajasri chicken weighed significantly (P<0.05) higher cutup parts than female Rajasri chicken. Quality attributes like pH, Water Holding Capacity and Proximate Composition also exhibited significant (P<0.05) variation between sexes and type of muscles.

Keywords: Hematological parameters, carcass characteristics, meat quality attributes, rajasri

Introduction
Customarily, varied carcass characteristics are encountered in different breeds and their crosses. To acquire the knowledge about the extent of disparity present in different breeds and their crosses, routinely, the carcass characteristics are evaluated. For devising proper breeding strategies to improve the poultry production, accurate evaluation of carcass characteristics is essential. To address the problems of improving the meat yield qualitatively and quantitatively, it is very essential to study the different carcass characteristics, as these characteristics are implicated with several aspects of economics of production and offering potential solutions (Singh *et al*., 1980) [39]. The pricing policy for chicken meat is based upon the pivotal information about the value and preference of each cut. Such crucial information can be accessed through studies on the yields of different cut up parts of a poultry carcass.
Selection of stock possessing intrinsic superior capacity to produce better quality meat and egg is of prodigious significance (Kumar, 2008) [23]. Varied growth rates of the integral constituent body parts lead to changes in the form, in addition to growth in size of birds during the growth phase. Carcass composition, Characteristics, Weight of different organs or parts of tissue of the body are useful to assess the developmental changes. At any given point of time, the criteria of prime significance to the meat industry are the developmental changes that determine the shape, conformation and body proportions of poultry.
Amongst the breeds, Eclectic variations exist in carcass consistency and uniformity. Inappropriate carcass weight and size, insufficient intramuscular fat (marbling), excess

external fat cover and inadequate tenderness can be included as prospective carcass problems. Utilization of carcass information (parental and progeny) and improved genetic selection practices addresses most of these quality challenges faced by the industry. The quality and yield of processed meat products is influenced by physico-chemical characteristics of raw meat. Majority of the processing technologies are content with the quality of the raw product.

Sri Venkateswara Veterinary University along with AICRP on Poultry, Hyderabad, with the intention of improving the egg production through backyard farming, developed a variety named Rajasri, apt for backyard rearing. Rajasri is a dual purpose, designer fowl, medium in size, with compact body, long shanks for agility to avoid predation, colourful plumage resembling desi birds and has capacity to withstand diseases and adverse climatic conditions (Viroji Rao *et al*., 2012) [43]. Rajasri variety is developed by crossing four different breeds involving two dual purpose types, one layer type exotic breed and one local non-descript poultry. It is distinct compared to other rural poultry varieties, as it possess broad genetic base and introgressed with genes from local birds by incorporating desirable traits such as higher productivity compared to nondescript fowls under range conditions. They have a laying capacity of 160-180 eggs per annum. Eggs are brown in color similar to desi egg. The meat from country chicken is often relished more, than broilers. The reasons are being, country birds receiving very varied diet, plenty of exercise and exposure to nature.

A comprehensive data base has been established as blood profile of domestic (Elagib *et al.,* 2012) [14] and genetically approved industrial species of fowl (Talebi *et al.,* 2005) [42], by measuring the normal values for hematological and biochemical factors. Critical parameters like Monitoring the health of the birds, their response to therapeutic regimen following sickness, decisions on the prognosis of certain poultry diseases can be done with the aid of diagnostic gadgets like Hematological parameters. Besides being a useful diagnostic tool, information on hematological parameters could equally be integrated into breeding programmes for the genetic improvement of indigenous chickens (Alewi *et al.,* 2012) [2]. For implementation of better management practices, breeding policies, feed schedules, prevention and treatment of diseases, the knowledge about the normal physiological values under local conditions is essential.

From a consumer`s acuity of meat and meat products, Nutritive and Physicochemical properties of meat are generally regarded as the most critical aspects. Although Nutritive value of meat is of great concern for the purchaser, physicochemical properties of meat are also vital for meat processing and consumer acceptance. Earlier studies by Naga Raja Kumari and Subrahmanyeswari (2014) [29] and Daida Krishna *et al*., (2012) [10] concentrated on the productive traits of Rajasri chicken. However, comprehensive studies on Hematological parameters, carcass characteristics and meat quality of Rajasri birds were not carried out extensively. Very Scanty scientific data is available on performance of chicken varieties in terms of body weight at slaughter age, carcass yield and other physico-chemical characteristics. Variation elicited by varieties on different parameters is a requisite; hence its assessment can be endeavored.

Keeping in view of the necessity for strengthening the database available for Rajasri bird, the present study has been envisioned with an objective to assess the Haematological parameters, Carcass characteristics and Technological meat quality attributes of rajasri chicken.

Materials and Methods

Eight weeks old Rajasri birds were distributed to BPL families in the rural areas surrounding the College of Veterinary Science, Proddatur and College of Veterinary Science, Tirupati, in order to evaluate the performance of these birds at farmers' backyard and to study impact on the livelihoods of farmers. Equal number of male and female birds of 20 weeks age, which were procured randomly from eighteen beneficiaries each, from Proddatur and Tirupati (n=72) were utilized in this study for evaluation of Carcass characteristics, Hematology and Technological meat quality attributes.

Carcass characteristics

A total of 72 birds aging 20 weeks, which included both males and females were procured from the beneficiaries and slaughtered, over a period of 2 months. Birds were fasted overnight and slaughtered as per standard slaughter procedure. Eviscerated weight is the basis for calculating Carcass weight. The ratio between carcass weight and pre-slaughter live weight was calculated as Dressing percentage. Inedible offals weight, like the weights of blood, feather, head, shank and viscera; giblets weight like the weights of heart (without pericardium and blood clot), liver (without gall bladder), and gizzard (without mucous membrane) and weights of the cutup parts like neck, wings, back, breast, legs and drumsticks were recorded. Percentage yield of cut up parts was calculated based on eviscerated carcass weight, while the yield of inedible and edible offals were calculated based on pre-slaughter live weight.

Meat quality attributes

Physico-chemical quality study of meat was conducted in the Department of Livestock Products Technology. Meat samples were collected aseptically from the thigh and breast muscles and kept at refrigeration temperature (4 ± 1^0C). After 24 hours samples were taken out to assess the physico-chemical attributes. The pH of breast and thigh muscle samples was measured by adopting the procedure laid down by AOAC (2005) [5] using a digital pH meter (SYSTRONICS µ pH system 361) with a glass electrode. About 10 g of meat sample was blended with 50 ml of distilled water for one minute in a blender and the volume was made up to 100 ml and pH was recorded. The estimation of water holding capacity (WHC) of breast meat was determined according to the method of Whiting *et al*., (1981) [45]. Breast and thigh sample of 500 mg was taken and placed between the pre-weighed filter papers. Then it was placed on a rigid, flat surface by keeping polythene sheet above and below. A pressure (40 psi) i.e. 2.81 kg was applied over it for 5 min. The meat flake was removed from the filter paper and weighed. The filter papers were dried and weighed. The percent WHC is estimated as the ratio between the weights of meat flake along with protein attached to the filter paper to the sample weight. The percentage of moisture, protein, fat and total ash were determined as per the methods recommended by A.O.A.C. (2005) [5]. Dry matter content was determined by oven drying at 103°C; Kjeldahal method was used for the analysis of total nitrogen content and crude protein content was calculated and expressed as percentage. total fat content was obtained by Soxhlet extraction using

petroleum ether (B.P. 80-90°C); Ash content was determined by charring fresh sample followed by heating in a muffle furnace for 3 to 5 h at 600°C.

Hematology

Hematological studies were conducted in the Department of Veterinary Physiology. Blood drawn from the live birds was subjected to estimation of haematological parameters by using auto hematology analyzer (BC-2800, Shenzhen Mindray Bio-Medical electronics Co. Ltd.,). Differential WBC counts were made on monolayer blood films, stained using Giemsa stain after fixing them with methyl alcohol.

The data was subjected to statistical analysis by applying one way ANOVA (Analysis of Variance), Univariate analysis using Statistical Package for Social Sciences (SPSS) version 21. Differences between means were tested using Duncan's multiple comparison test and significance was set at $P<0.05$.

Results and Discussion

Carcass characteristics

The Pre-slaughter weight, Carcass weight and Dressing percentages of Male and Female Rajasri chicken were presented in Table: 1. The Pre-slaughter weight, Carcass weight and Dressing percentages of Male were found to be significantly ($P<0.05$) higher compared to females.

Table 1: Pre-slaughter weight, Carcass weight and Dressing percentages of Male and Female Rajasri chicken at 20 weeks of age.

Parameter	Sex		
	Female	Male	Overall Mean
Pre-slaughter weight (g)	1269.4 ± 20.13[a]	1752.8 ± 17.01[b]	1511.1 ± 24.17
Carcass weight (g)	909.84 ± 22.76[a]	1276.73 ± 11.05[b]	1093.29 ± 18.34
Dressing percentage	71.63 ± 0.51[a]	72.81 ± 0.54[b]	72.27 ± 0.54

In the present study, male birds (1752.8 g) were significantly heavier than female birds (1269.4 g) at 20 weeks of age. The mean body weights recorded were similar to Viroji Rao *et al.,* (2012) [43], who reported that the average body weight of Rajasri chicken at 20 weeks age was 1398 and 1750 g respectively in female and male. Nalla *et al.,* (2017) [30] also recorded comparable body weights, at 20 weeks of age (1165 and 1742 g respectively in female and male). Lesser body weights were reported by Daida Krishna *et al.,* (2012) [10], who studied Rajasri performance under backyard rearing, reported the body weight of Rajasri chicken at 20 weeks age (1078 to 1204 in male and 986.5 to 1024g in female). The average body weights of Rajasri chicken recorded in the present investigation was concurrent with the findings of Singh *et al.,* (2018) [38], in Cari Nirbheek, Hitcari and Cari Shyama birds. The higher body weight in males might be due to a result of higher growth rate and muscle mass than females in mature birds (Faria *et al.,* 2010) [16]. During embryonic development, the crucial factor on sex variations in body weight and muscularity may be predetermined when the number of myofibrils is established (Henry and Burke, 1999) [19]. Sexual dimorphism in favor of males can also be attributed. Ramappa *et al.,* (1986) [35] proposed that, Males have much higher rate of cell multiplication and showed faster rate of growth than females, apart from favorable influence of androgenic hormones on growth rate of males. Significant ($P<0.05$) effect of sex on pre-slaughter weight in Rajasri chicken was similar to the findings of Nalla *et al.,* (2017) [30], Debata *et al.,* (2012) [11] in Black Rock, Red Cornish and Vanaraja chicken and Kumar *et al.,* (2012) [22] in Vanaraja chicken.

Higher carcass weight and dressing percentage was recorded in the present research in male birds compared to female. This is in accordance with the findings of Musundire *et al.,* (2018) [26] in scavenging chickens and helmeted guinea fowls, Nalla *et al.,* (2017) [30] in Rajasri chicken, Kumar *et al.,* (2012) [22] in Vanaraja chicken, Debata *et al.,* (2012) [11] in Black Rock, Red Cornish and Vanaraja chicken at 20 weeks of age and Raji *et al.,* (2010) [34] in broilers.

The weights of different cut up parts and their percentage yields were shown in Table: 2. The weights of different cut up parts were significantly ($P<0.05$) higher in males, than the female counterparts. With regard to the percent yields of cutup parts, comparatively male Rajasri chicken showed significantly ($P<0.05$) higher percent yields than females except, for breast and back. Percent yields for breast and back were found to be higher in female. These results are in consonance with the conclusions of Sahoo *et al.,* (2018) [12], in Triple Cross Progenies of Hansli, CSML and CSFL Chickens; Nalla *et al.,* (2017) [30] in Rajasri chicken; Debata *et al.,* (2012) [11] in Black Rock, Red Cornish and Vanaraja chicken at 20 weeks of age; Kumar *et al.,* (2012) [22] in Vanaraja chicken and Muthukumar *et al.,* (2011) [28] in broilers.

The results (Table: 3) reveals a significantly ($P<0.05$) higher giblet weights in males, than the corresponding female giblets of Rajasri chicken studied. However, Percent yield of edible offals was found to be significantly ($P<0.05$) higher in female Rajasri chicken, except the percent yield of heart, which was significantly ($P<0.05$) higher in male. These findings were identical to the interpretations of Shafiq *et al.,* (2019) [37], in naked neck chickens; Pandey *et al.,* (2018) [32] in Native × improved CSFL (coloured synthetic female line) F1 crossbred chickens and the commercial broilers; Nalla *et al.,* (2017) [30] in Rajasri chicken, Kumar *et al.,* (2012) [22] in Vanaraja chicken, Olawumi *et al.,* (2011) [31] in broilers.

The results of the current research, as portrayed in Table: 4 disclose that male Rajasri chicken showed significantly ($P<0.05$) higher weights of inedible offal compared to female Rajasri chicken. The percent yields of inedible offal was significantly ($P<0.05$) higher in males than their corresponding contemporary females, except for the percent yield of viscera which was found to be higher in female Rajasri chicken. These findings are similar to the findings of Nalla *et al.,* (2017) [30] in Rajasri chicken, Anitha (2017) [4] in Vanaraja Chicken, Kumar *et al.,* (2012) [22] in Vanaraja chicken and Brake *et al.,* (1993) [9] in broilers.

Technological Meat quality attributes

The difference in the technological quality attributes of male and female Rajasri chicken were depicted in Table: 5. The observations show that the differences of pH was non-significant in breast and thigh muscles of male to the corresponding muscles of female Rajasri chicken. Thigh muscle of both sexes showed significantly ($P<0.05$) higher pH than breast muscle in present study. Souza *et al.,* (2011) [40] reported that the effect of sex on ultimate pH in broilers was non-significant and also observed that ultimate pH of thigh muscle was higher compared to breast muscle. The higher thigh muscle pH can be attributed to higher muscular activities in leg muscles than breast muscle as stated by Sanka *et al.,* (2014) [36], who observed a slightly higher pH of drumstick and thigh muscle, inferred that males were probably more active than female. The high pH of drumstick

is ostensibly due to the different type of oxidative muscles that predominate in drumstick Vs glycolytic muscles in the breast, as ascribed by Diaz *et al.,* (2010) [13]. Anitha Reddy *et al.*, (2017) [4] in Rajasri chicken; Abdullah *et al.,* (2010) [1] in broilers and Musa *et al.,* (2006) [27] in Anka and Rugao breeds, observed non-significant difference in ultimate pH between males and females. Bals, 2009 [6] informed that, at a pH of 5.4 to 6.2 the meat is normally considered to be of high quality.

Water holding capacity (ability to retain inherent water) is a vital property of fresh meat as it affects both the yield and the quality of the end product. The differences in WHC between the corresponding thigh and breast muscles of male and female Rajasri chicken in the present study were non-significant. These results were in accordance with the findings of Anitha Reddy *et al.,* (2017) [4] in Rajasri chicken. Husak *et al.,* (2008) manifested that higher pH of meat is more effective for retaining desirable colour and moisture absorption properties in broilers. Musa *et al*., (2006) [27] found no significant effect of sex on WHC of Anka and Rugao breeds. However, regardless of the sex, WHC in the present study was significantly higher in thigh muscle, compared to breast muscle which might be due to higher pH in thigh muscle as compared to breast muscle. Berri *et al.,* (2007) [7] reported that reduction in the glycolytic potential of muscle fibers ensued to an Increase in breast muscle fiber diameter and correlated their finding with an escalation in pH and WHC of muscle. These findings were akin to the present research.

The proximate composition of Breast and Thigh muscles of Rajasri chicken were displayed in Table: 5. The percent moisture, crude protein, crude fat and total ash documented in the present study were synchronizing with the values of Sahoo *et al.,* (2018) [12], in Triple Cross Progenies of Hansli, CSML and CSFL Chickens; Pandey *et al.,* (2018) [32] in Native × improved CSFL - F1 crossbred chickens and the commercial broilers and Nalla *et al.,* (2017) [30] in Rajasri chicken. A significant (P<0.05) effect of sex was noticed in the present study, on percent moisture, crude protein, crude fat and total ash of Rajasri chicken. In the present study, the difference in moisture percent was insignificant between male breast and female breast muscle, as well as male thigh and female thigh muscle. Protein percent was higher in male than female in both muscles, crude fat percent was higher in female in both muscles and ash percentage was higher in male in both muscles. Anitha Reddy *et al.,* (2017) [4] also reported similar results in Rajasri chicken. In contrary to these findings Lopez *et al.,* (2011) [25] reported an insignificant effect of sex on proximate composition in broilers. However, in the current study, irrespective of the sex, thigh muscle had higher moisture percent and crude fat percent in comparison to breast muscle, where higher crude protein and total ash percent was recorded in breast muscle than thigh muscle in both the sexes. These conclusions were correlated with Anitha Reddy *et al.,* (2017) [4] in Rajasri chicken, Fakolade (2015) [15] in Harco Black chicken, and Haunshi *et al.,* (2013) [18] in native chicken breeds.

Hematology

The comparison between hematological profile of males and female Rajasri bird is presented in Table: 6. The blood profiles of male and female of Rajasri birds revealed a significant (P<0.05) difference between them in certain hematological parameters.

The WBC count (10^3/µl) (Mean ±S.E.) of Rajasri birds recorded in the present study, regardless of the sex, was 27.22 ± 2.91. Srinivas and Swathi (2018) [17] also reported congruent results. The difference in WBC count (10^3/µl) (Mean ±S.E.) was insignificant between males and females of Rajasri birds. Males (27.63 ± 2.51) had higher WBC values than females (26.81 ± 1.51). These findings were similar to the observations of Bora *et al.* (2017) [8]. The mean RBC count (10^6/µl) observed in this investigation was 3.21 ± 0.10. Similar values were reported by Srinivas and Swathi (2018) [17]. RBC (10^6/µl) value recorded during the present study in Rajasri females (3.33) were significantly (P<0.05) higher than males (3.09) of Rajasri. Harmonious results were noticed by Bora *et al.* (2017) [8] in rajasri birds, Kundu *et al.* (2013) [24] in Vanaraja chicken and Nicobari fowl. However, these findings were contrary to the report of Panigrahy *et al.* (2017) [33], who reported that the RBC counts were higher in males than females in Vanaraja chicken. The mean haemoglobin concentration (g/dL) didn't show any significant difference between both the sexes of Rajasri in present study. However, the male birds have a higher haemoglobin content compared to females. According to the report by Sturkie, (1965) [41] Hb and PCV were influenced by androgen. Irrespective of the sex, the mean haemoglobin concentration (g/dL) observed in rajasri birds was 12.71 ± 0.51. These findings corroborate well with the reports of Srinivas and Swathi (2018) [17] in Rajasri birds. The (Mean ± S.E.) values of MCV, MCH and MCHC observed in the present investigation are analogous to the reports of Srinivas and Swathi (2018) [17]. Within erythrocyte indices, significant (p<0.05) difference was noticed between both the sexes of Rajasri in MCV and MCH, where the values were higher in males than females. These observations are substantiated well with the interpretations of Al-Marzooqi *et al.* (2019) [44] Indigenous and Commercial Chicken Strains; Bora *et al.* (2017) [8] in Rajasri birds. Whereas MCHC recorded in females was higher non-significantly, than males of Rajasri. Similar findings of high MCHC were reported by Bora *et al.* (2017) [8] in Rajasri birds. Significantly higher MCHC was stated by Isidahomen *et al.* (2011) [21] in male Nigerian local chicken. But the result was conflicting with the research of Ibrahim (2012) [20] where, he opined that the MCHC values are independent of sex. There was no significant difference observed between male and female Rajasri birds with regard to differential leukocyte counts. The outcomes regarding the differential leukocyte counts in the present research are compatible with the results of Bora *et al.* (2017) [8] but contradictory with other previous researchers, who reported higher lymphocyte values in males than females and high heterophil values in females than males (Panigrahy *et al.,* 2017) [33].

Other hematological parameters didn't show any significant difference between both the sexes.

Table 2: Weights (g) and percent yields (%) of different cutup parts of Rajasri chicken at 20 weeks of age

Cut Up Part	Weight (g) of cut up part			Percentage Yield of cut up part		
	Female	Male	Overall Mean	Female	Male	Overall Mean
Neck	63.42 ± 1.72[a]	97.63± 0.61[b]	80.53 ± 2.11	6.97 ± 0.06[a]	7.64 ± 0.03[b]	7.31 ± 0.08
Wing	114.51 ± 3.04[a]	168.72 ± 1.55[b]	141.62 ± 3.52	12.59 ± 0.05[a]	13.21 ± 0.02[b]	12.9 ± 0.05
Breast	246.72 ± 6.34[a]	318.96 ± 2.51[b]	282.84 ± 8.12	27.11 ± 0.03[b]	24.98 ± 0.03[a]	26.05 ± 0.11
Back	228.36 ± 5.35[a]	269.72 ± 2.57[b]	249.04 ± 6.68	25.09 ± 0.03[b]	21.13 ± 0.03[a]	23.11 ± 0.04
Thigh	138.54 ± 3.63[a]	213.06 ± 1.86[b]	175.8 ± 4.26	15.23 ± 0.03[a]	16.69 ± 0.01[b]	15.96 ± 0.04
Drumstick	117.39 ± 3.02[a]	204.27 ± 2.22[b]	160.83 ± 3.44	12.91 ± 0.01[a]	15.99 ± 0.06[b]	14.45 ± 0.06

Means bearing different superscripts in a column differ significantly (P<0.05)

Table 3: Weights (g) and percent yields (%) of different Edible offal of Rajasri chicken at 20 weeks of age

Edible Offal	Weight (g) of Edible Offal			Percentage Yield of Edible Offal		
	Female	Male	Overall Mean	Female	Male	Overall Mean
Liver	21.27 ± 0.06[a]	26.36 ± 0.09[b]	23.82 ± 0.15	1.68 ± 0.03[b]	1.51 ± 0.005[a]	1.60 ± 0.02
Gizzard	23.15 ± 0.03[a]	29.63 ± 0.09[b]	26.39 ± 0.11	1.82 ± 0.03[b]	1.69 ± 0.004[a]	1.76 ± 0.02
Heart	4.18 ± 0.06[a]	7.39 ± 0.05[b]	5.79 ± 0.10	0.33 ± 0.008[a]	0.42 ± 0.003[b]	0.38 ± 0.02
Giblet	48.61 ± 0.07[a]	63.38 ± 0.14[b]	55.99 ± 1.29	3.83 ± 0.07[b]	3.62 ± 0.009[a]	3.73 ± 0.06

Means bearing different superscripts in a column differ significantly (P<0.05)

Table 4: Weights (g) and percent yields (%) of different Inedible offal of Rajasri chicken at 20 weeks of age

Inedible Offal	Weight (g) of Inedible Offal			Percentage Yield of Inedible Offal		
	Female	Male	Overall Mean	Female	Male	Overall Mean
Blood	34.22 ± 0.58[a]	40.54 ± 0.70[b]	37.38 ± 1.16	2.32 ± 0.03[a]	2.69 ± 0.01[b]	2.51 ± 0.08
Feather	71.11 ± 1.06[a]	93.39 ± 0.58[b]	82.25 ± 0.94	5.33 ± 0.03[a]	5.61 ± 0.08[b]	5.47 ± 0.07
Head	38.06 ± 0.90[a]	51.12 ± 0.83[b]	44.59 ± 1.53	2.91 ± 0.04	2.99 ± 0.02	2.95 ± 0.04
Feet	34.15 ± 0.86[a]	46.09 ± 1.15[b]	40.12 ± 1.07	2.62 ± 0.06	2.69 ± 0.02	2.66 ± 0.04
Viscera	131.28 ± 2.67[a]	182.56 ± 0.79[b]	156.92 ± 1.64	10.42 ± 0.03[b]	10.34 ± 0.02[a]	10.38 ± 0.04

Table 5: Technological Meat Quality Parameters of Rajasri Chicken

	Sex			
	Female		Male	
Muscle / Parameter	Breast	Thigh	Breast	Thigh
pH_{45}	6.08 ± 0.01[a]	6.13 ± 0.01[b]	6.06 ± 0.01[a]	6.11 ± 0.01[b]
pH_{24}	5.68 ± 0.01[a]	5.87 ± 0.01[b]	5.66 ± 0.02[a]	5.83 ± 0.02[b]
Water Holding Capacity	21.57 ± 0.03[a]	23.87 ± 0.02[b]	21.14 ± 0.0 [a]	23.18 ± 0.06[b]
Moisture %	74.17 ± 0.96[A]	75.22 ± 0.13[B]	74.36 ± 0.19[A]	75.23 ± 0.14[B]
Protein %	22.78 ± 0.20[aB]	20.64 ± 0.16[aA]	23.59 ± 0.14[bB]	21.64 ± 0.16[bA]
Fat %	1.34 ± 0.09[bA]	1.87 ± 0.12[bB]	1.18 ± 0.03[aA]	1.54 ± 0.05[aB]
Ash %	1.04 ± 0.01[aB]	0.93 ± 0.05[aA]	1.11 ± 0.02[bB]	1.08 ± 0.01[bA]

Table 6: Comparative hematology of Rajasri chicken during 20th week

	Male	Female	Overall Mean
WBC ($10^3/\mu L$)	27.63 ± 2.31	26.81 ± 1.51	27.22 ± 2.61
RBC ($10^6/\mu l$)	3.09 ± 0.09[a]	3.33 ± 0.09[b]	3.21 ± 0.10
HGB (g/dL)	13.17 ± 0.36	12.24 ± 0.42	12.71 ± 0.51
HCT (%)	42.70 ± 1.43	45.56 ± 1.15	44.13 ± 1.68
MCV (fL)	145.27 ± 1.42[a]	136.86 ± 1.63[b]	141.07 ± 1.84
MCH (pg)	41.18 ± 0.45[a]	38.53 ± 0.62[b]	39.86 ± 0.74
MCHC (g/dL)	27.76 ± 0.1	28.87 ± 0.35	28.32 ± 0.41
PLT ($10^3/\mu L$)	63.48 ± 2.46	66.74 ± 2.73	65.11 ± 2.91
MPV (fL)	6.36 ± 0.21[a]	6.98 ± 0.18[b]	6.67 ± 0.28
PCT (%)	0.04 ± 0.01	0.05 ± 0.01	0.045 ±0.01
Lymphocytes (%)	56.52 ± 1.65	51.58 ± 1.29	54.05 ± 1.92
Heterophils (%)	35.65 ± 1.38	37.50 ± 1.24	36.58 ± 1.42
Basophils (%)	2.86 ± 0.38	3.41 ± 0.29	3.14 ± 0.42
Monocytes (%)	3.56 ± 0.45	2.38 ± 0.29	2.97 ± 0.51
Eosinophils (%)	3.18 ± 0.57	4.72 ± 0.68	3.95 ± 0.72

Means bearing different superscripts in a column differ significantly (*P*<0.05)

Conclusion

Production of quality product by producers will lead to a position to be rewarded, when such producers can provide carcass information to potential buyers. When carcasses are traded on value based carcass grids, Carcass traits are an imperative consideration in selection, especially when ownership is retained.

The present study infers that male and female Rajasri chickens had significant (P<0.05) differences in hematological parameters like total RBC, hemoglobin, PCV and MCHC. Carcass characteristics were significantly (P<0.05) affected by sex of Rajasri chicken. Male Rajasri chicken showed significantly (P<0.05) higher carcass yield and dressing percentage compared to females. Percent yield of inedible offal was found significantly (P<0.05) higher in male chicken except for viscera where it was higher in female. Giblets yield was found significantly (P<0.05) higher in male. Cutup parts yield was significantly (P<0.05) higher in male than female. Physicochemical meat qualities was significantly (P<0.05) different in male and female Rajasri chicken. The male bird exhibited significantly (P<0.05) superior performance than female. It can be recommended that slaughter of Rajasri bird at 20 weeks can be considered.

The results of the study will be helpful not only for accurate interpretation of hematological data, carcass characteristics, meat quality of the indigenous poultry, but also to promote Rajasri birds to rural area farmers as back yard poultry rearing for their livelihood and nutritional security.

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