

Influence of sex on carcass characteristics of Cochin bantam chickens

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ABSTRACT

Cochin bantams are the more attractive bantam chickens commonly reared in confinement for meat and fancy purpose. Influence of sex on carcass characteristics of Cochin bantam chickens was studied. A total of 20 Cochin bantam chickens comprising of ten male and female each at fortieth week of age were subjected for slaughter as per standard procedure. The results revealed that the sex had significant influence on pre slaughter live weight and per cent yield of giblet. Males had significantly ($P \leq 0.01$) higher pre slaughter live weight ($895.30 \pm 17.86g$) and females had significantly ($P \leq 0.05$) higher mean per cent yield of giblet ($5.50 \pm 0.23\%$). However, no statistically significant differences between sexes were observed in per cent yield of New York dressed weight, eviscerated weight, ready to cook weight and organ cuts viz., breast, back, thigh, drumstick, wing and neck weights.

Key Words: Cochin bantam chickens, sex, carcass yield, cut up parts

INTRODUCTION

Bantam chickens are small variety of chicken breeds and are popular as pets as well as for show purposes because they have more varied and exotic colors and feather patterns than other chickens. Bantams are also suitable for smaller backyards as they do not need as much space as other breeds. In India, Cochin bantams are the more attractive bantam chickens commonly reared in confinement for meat and fancy purpose. Bantam chicken meat has a very fine texture and flavor. Their small carcasses cannot compete on the commercial market

but surplus birds can be sold for meat purpose.

The marketing of poultry has been greatly diversified with a significant increase in cut-up (parts) and processed products (Le Bihan-Duval et al., 2001). Breed, strain, body weight, carcass weight, nutrition, sex, age, and environmental conditions influence the yield of broiler parts and carcass composition (Lopez et al., 2011). The study on the different carcass characteristics of different breeds of chicken is essential as it implicates various aspects of economics of chicken production and to offer solutions for improving meat yield both qualitatively and quantitatively (Singh *et al.*, 1980). Studies on the yields of different cut up parts of a carcass will give primary information on the value and preference of each cut and

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should form the basis for pricing policy. Carcass characteristics of Cochin bantam chickens need to be explored for their full utility in poultry production. Therefore, the present study was conducted to assess the effect of sex on the carcass traits of Cochin bantam chickens.

MATERIALS AND METHODS

Site of study

The experiment was carried out at Poultry Research Station, Tamil Nadu Veterinary and Animal Sciences University, Chennai to find out the influence of sex on carcass characteristics of Cochin bantam chicken reared under deep litter system of management.

Experimental Design

About 40 Cochin bantam chicks were hatched and reared on deep litter system of rearing from day one to forty weeks of age in open sided poultry house. All the Cochin bantam birds were kept under uniform management conditions throughout the experimental period. The birds were vaccinated against New castle disease as per the routine vaccination schedule.

Feed

Cochin bantam chickens were fed brooder mash diet up to eight weeks of age (2500 Kcal/kg M.E. and 18 % C.P.), grower mash diet from nine to nineteen weeks of age (2600 Kcal/kg M.E. and 16 % C.P.) and layer mash diet from twenty weeks of age onwards (2600 Kcal/kg M.E. and 16% C.P.). Feed ingredients used in ration formulations were maize, soybean meal, fish meal, de-oiled rice bran, salt and vitamin premix,

lysine, DL methionine, trace minerals, shell grit and dicalcium phosphate. The birds were fed ad libitum feed and potable water.

Data collection

A total of 20 bantam chicken birds comprising of ten male and female each at fortieth week of age were subjected for slaughter hygienically to avoid contamination as per standard procedure for studying carcass characteristics. The birds were subjected to starvation of 12 hrs before slaughter without restriction of potable water and individually weighed to obtain pre slaughter live weight. The birds were stunned and immediately exsanguinated by manually severing both the carotid arteries and at least one jugular vein with a knife, and were allowed to bleed for 120 s. After bleeding, birds were scalded at 59°C for 180 s in a rotary scalding followed by carcass defeathering and the process was completed by removing the heads. In the evisceration room, the vent was cut with a plunging cylindrical knife and an eviscerator pulled the viscera from the cavity. The sex of each bird was determined by a visual examination of gonads during evisceration. The slaughter process was completed with several internal and external washings of the carcasses. The whole process was completed within 20 min from the hanging of live birds. The carcass was separated into breast, thighs, drumstick, back, wing, thigh, neck, head and giblets [liver (without gall bladder), gizzard (without mucous membrane) and the heart (after removal of blood clot and pericardium)]. Individual edible organs weights were recorded to the nearest 0.1 g accuracy. The per cent yield of New york dressed weight, eviscerated weight, giblet

weight, ready to cook weight, breast, back, thigh, drumstick, wing and neck weights were determined.

Statistical analysis

The percent values were transferred to arcsine values before statistical analysis. The data were analyzed statistically using Completely Randomized Design (CRD) described by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The result of the effect of sex on carcass traits of Cochin bantam chickens is presented in table I. The overall mean pre slaughter live weight of Cochin bantam chicken was 817.75 ± 22.49 g. Significant difference ($P < 0.01$) was found in pre slaughter live weight between males and females. Male Cochin bantam chickens had higher pre slaughter live weight (895.30 ± 17.86 g) than females (740.20 ± 21.92 g). The higher body weight recorded in males in this study might be due to higher growth rate and muscle mass than in female birds (Faria *et al.*, 2010; Lawrie and Ledward, 2006). The findings of this study indicating higher pre slaughter live weight in male chickens are in agreement with those of Moreira *et al.* (2003) in six broiler breeds (Cobb 500 Slow, Cobb Fast, Ross 308, Ross 508, Hybro Plus and Avian 48); Shahin and Elazeem (2005) in broiler chickens; Bogosavljevic-Boskovic *et al.* (2006) in hybrid Hybro G chicken; Ojedapo *et al.* (2008) in Ross broiler strain; Debata *et al.* (2012) in Black Rock, Red Cornish and Vanaraja chickens; Isidahomen *et al.* (2012) in Nigerian Indigenous Chickens, Thutwa *et al.* (2012) in tswana chickens, Fernandes

et al., (2013) in broilers; Kuzniacka *et al.* (2014) in broilers; Maiorano *et al.* (2017) in Ross chickens and Cygan-szczegielniak *et al.* (2019) in Ross 308 chickens.

The overall mean per cent yield of Newyork dressed weight was 84.64 ± 1.40 and there was no statistically significant difference between males (86.35 ± 1.89) and females (82.94 ± 2.02), which is in line with the finding of Thutwa *et al.* (2012) in Tswana chickens. The overall mean per cent yield of eviscerated weight was 65.89 ± 1.03 and the sex did not have significant ($P > 0.05$) effect. The mean per cent yield of eviscerated weight in males and females was found to be 65.80 ± 1.75 and 65.97 ± 1.20 , respectively. Similar reports were also reported by Thutwa *et al.* (2012) in Tswana chickens; Fernandes *et al.* (2013) in broilers and Sanka and Mbagi, (2014) in Tanzanian local chicken. Bilgili *et al.* (2006) observed that the processing yields of broilers were influenced by strain-cross.

The overall mean per cent yield of giblet weight was 4.97 ± 0.22 . Sex had highly significant ($P < 0.01$) influence and it was $4.45 \pm 0.29\%$ for male and $5.50 \pm 0.23\%$ female Cochin bantam chickens. Ojedapo *et al.* (2008) and Shahin and Elazeem (2005) reported that the differences in gizzard weight were higher in male than female in different broiler strains. The overall mean per cent ready to cook weight was 70.11 ± 1.04 . There was no significant difference observed between males ($69.65 \pm 1.72\%$) and females ($70.56 \pm 1.25\%$) on per cent ready to cook weight. Similar report was also recorded by Thutwa *et al.* (2012) in Tswana chickens.

The overall mean per cent value of 26.76±0.45, 21.89±0.42, 14.65±0.27, 14.25±0.25, and 14.13±0.41 and 8.05±0.31% was recorded for the organ cuts viz., breast, back, thigh, drumstick, wing and neck, respectively. There was no statistically significant difference between males and females found on organ cuts viz., breast, back, thigh, drumstick, and wing and neck respectively. The results of this study showing non-significant differences in the yield of all carcass parts between sexes were in agreement with the earlier research findings of Bogosavljevic-Boskovic *et al.* (2006) in hybrid Hybro G chicken; Shahin and Elazeem (2005) in broiler chickens; Moreira *et al.* (2003) in six broiler breeds (Cobb 500 Slow, Cobb Fast, Ross 308, Ross 508, Hybro Plus and Avian 48). However, Lopez *et al.* (2011) reported that breast weight and percentages between females and males were significantly different. The carcass parts weights (except thigh weight) did not differ significantly between the males and females of Tswana chickens (Thutwa *et al.* 2012) The breast and wing

parts weights did not differ significantly between the males and females of broiler strains (Fernandes *et al.*, 2013). On the contrary, the results by Young *et al.* (2001) showed that broiler chicken females yielded larger proportions of forequarters, breasts and fillets, but smaller proportions of drumsticks than males, under commercial-like conditions.

CONCLUSIONS

The results revealed that the sex had highly significant ($P \leq 0.01$) influence on pre slaughter live weight and significant ($P \leq 0.05$) influence on percent giblet yield of Cochin bantam chickens. Male Cochin bantam chickens had higher pre slaughter live weight and Female Cochin bantam chickens had significantly ($P \leq 0.05$) higher percent yield of giblet. However no statistically significant differences between sex was observed in percent yield of New York dressed weight, eviscerated weight, ready to cook weight and organ cuts viz., breast, back, thigh, drumstick, wing and neck weights.

Table I. Mean (±S.E.) carcass characteristics of Cochin bantam chicken as influenced by sex

Carcass Traits	Male	Female	Overall mean
Pre slaughter live weight **	895.30±17.86	740.20±21.92	817.75±22.49
NewYork Dressed weight% ^{NS}	86.35±1.89	82.94±2.02	84.64±1.40
Eviscerated weight% ^{NS}	65.80±1.75	65.97±1.20	65.89±1.03
Giblet weight %*	4.45±0.29	5.50±0.23	4.97±0.22
Ready to cook weight% ^{NS}	69.65±1.72	70.56±1.25	70.11±1.04
Breast weight % ^{NS}	26.32±0.62	27.20±0.66	26.76±0.45
Back weight % ^{NS}	21.47±0.73	22.31±0.41	21.89±0.42
Thigh weight % ^{NS}	15.08±0.39	14.22±0.34	14.65±0.27

Drumstick weight % ^{NS}	14.53±0.46	13.97±0.21	14.25±0.25
Wings weight % ^{NS}	13.89±0.54	14.37±0.63	14.13±0.41
Neck weight % ^{NS}	8.49±0.52	7.62±0.30	8.05±0.31

Means having common superscript within the row do not differ significantly ($P>0.05$)

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