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Research Article

Quantitative Comparison on Meat Yield Characteristics between Indigenous and Broiler Chickens

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ABSTRACT

A study was carried out to analyze a quantitative comparison of meat yield characteristics between Broiler and Indigenous chicken. In Indigenous chickens, Gramapriya, Gramasree and Broiler chickens Ross (308) and Vencobb (430) were utilized for study purposes. Chickens with Weights ranging from 1300g to 1500g were isolated to maintain uniformity in yield analysis. Slaughter and dressing were conducted per the Halal slaughtering method in commercial meat shops without significant variations. After dressing and evisceration protocols, dressing percentage, portioned cut parts yield details were evaluated and recorded. Statistical analysis was conducted using a randomized blocks design to analyze significant differences between different Indigenous and Broiler chickens strains used in the present study. Our investigations were evaluated through an analysis of variance and revealed a significant difference (P<0.05) between indigenous and Broiler chickens in dressing percentage, boneless breast, skinless thigh, skinless drumsticks, and wings. Thus it can be concluded that momentous efforts were in demand to improve the genetic diversity of Indigenous chickens to raise dressing percentage and meat bone percentage contribution to the upliftment of the economy of rural farms that are involved in backyard poultry farming.

Keywords: *Broiler chickens, Dressing percentage, Indigenous chickens, Yield comparison.*

INTRODUCTION

India's domestic meat industry is mostly based on the production of fresh meat, which is produced and sold daily. The demand for poultry meat in India has been increasing year by year because of high protein availability at an affordable cost for all classes of people in the country. The production of poultry products with a minimal negative impact on the world's environment is critical to the sustainability of one of our most important sources of high quality animal protein Bailey (2020). In India, around 36 % of the total consumed meat is from poultry.

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The Broiler hen of normally 2-3 kg is used for slaughtering purposes, and the Broiler chicken attains its Weight for the period of 35 to 40 days. Tarun Bajaj et al. (2020). The rearing pattern and genomic setup of Broiler completely differ from Indigenous chickens with respect to factors like limited movement in rearing stages and abundant supply of quality feed with appropriate veterinary care and monitoring.

Rural poultry, to be precise, is crucial for the livelihood of many poor farmers, as it often remains the only asset they possess Taliha Ahmed et al. (2021). The use of antibiotic growth promoters in the broiler industry has been seriously criticized by policymakers and consumers because of the development of microbial resistance to these products and the potentially harmful effects on public health Gobiraju et al. (2019). The objectives of the present study were a brief comparison of dressing percentage between indigenous and broilers, an indication of the quality of feed, rearing pattern and genetic diversity of birds. Also, the present study results expected to receive precise data on meat yield while processing birds at a similar body weight range. Knowledge of yield data is essential for effective planning and marketing for small scale farmers. Economic return from the poultry chiefly depends on significant characteristics like live body weight and dressed chicken yield percentage. The lack of proper quantitative data between Broiler and Indigenous breeds was a major constraint for farmers and retail shop owners. Poultry meat was chosen for study because of the wide consumption pattern among non-vegetarians and ready accessibility during covid -19 lockdown conditions.

MATERIALS AND METHODS

A study was carried out to analyze a quantitative comparison on meat yield characteristics between Broiler and indigenous chicken. This was carried out by Halal slaughtering method for both broiler and indigenous chickens. We have conducted experiment in Six replications in both indigenous and Broiler birds.

- Indigenous Birds: Gramapriya, Gramasree,
- Broiler bird strains : Ross (308) and Vencobb (430)

The bird weight ranges from 1300 – 1500 g were only purchased from local market to maintain uniformity in quantitative comparison. Healthy chickens were selected in the meat shop without any deformities and diseased condition. Slaughtering performed by Halal slaughter method with the help of mullah in meat shops. Live birds were weighed before slaughter and dressing. Dressing procedures were followed as reported by Silverside et al. (1992). Whole dressed carcasses (figure no.1) were portioned followed by boneless breast, wings, skinless drumsticks and thighs were weighed in individual. Dressed carcass weight was also recorded to analyze the dressing percentage between indigenous and Broiler breeds.

Study area: This study is carried out at various locations in Tamilnadu and Kerala. Gramapriya and Gramasree from Kalpetta in Wayanad district, Ross (308) and Vencobb (430) from Thogaimali in Trichy district.

Statistical analysis: The data was subjected to statistical analysis with the help of Department of Social Science (Agricultural Economics) as per the standard procedure with randomized block design to find significant difference among treatments.

RESULTS AND DISCUSSION

Dressing Percentage: The mean ± S.E value of dressing percentage of Indigenous chicken in Gramasree is 58.98% and in Gramapriya is 67.70%. The mean ± S.E value of dressing percentage of Broiler chicken in Ross (308) 70.47% and in Vencobb (430) is 73.34%. The analysis revealed that a significant difference ($P<0.05$) between Indigenous and Broiler in dressing percentage. However significant difference was observed between Gramasree and Gramapriya and also Broiler chickens Ross (308) and Vencobb (430). Sangilimadan et al. (2020) who reported that the dressing percentage was 58.42% which is similar to our

work in Gramasree dressing percentage. Our findings were not in agreement with Matinez et al. (2020) who worked in broiler genotypes and Dyubele et al. (2010) who stated that, dressing percentage was however higher in Indigenous birds than Broilers ($p<0.05$).

Boneless Breast: The mean ± S.E value of breast from Indigenous chicken in Gramasree is 17.48% and in Gramapriya is 18.19%. The mean ± S.E value of breast from Broiler chicken in Ross (308) 21.65% and in Vencobb is (430) is 31.17%. The analysis revealed that a significant difference ($P<0.05$) between Indigenous and Broiler in breast. However, there is no significant difference ($P>0.05$) observed between Gramasree and Gramapriya but significant difference ($P<0.05$) between broiler chickens Ross (308) and Vencobb (430). Bhaskar Reddy et al. (2021) who noted the breast yield of Rajasri, Vanaraja and Broiler chicken was 22.97%, 21.37% and 28.98% respectively. There is a significant difference ($p<0.05$) between Indigenous and Broiler chickens. Haunshi et al. (2013) who reported that breast yield of Aseel and Kadaknath was 15.62% and 13.48%, respectively. Aseel have the highest breast percentage than Kadaknath, however there was no significant difference between ($p>0.05$) Aseel and Kadaknath.

According to Khan et al. (2019) who reported that the breast yield of Aseel and Broiler was 13.2% and 18.67% respectively. He concluded that significant difference observed ($p<0.05$) between Indigenous and Broiler chicken in breast yield. Sheikhhasan et al. (2020) and Jan Wei's (2011) also reported that those who worked in Ross (308) broiled had the breast yield of 29.91%.There is a significant difference between ($p<0.05$) Indigenous and Broiler chicken. Both of the above findings were similar to the findings of the present study.

Skinless (S/L) Thighs: The mean ± S.E value of Thigh from Indigenous chicken in Gramasree is 17.11% and in Gramapriya is 27.71%. The mean ± S.E value of Thigh from Broiler chicken in Ross (308) is 23.72% and in Vencobb (430) is 22%. The analysis revealed that a significant difference ($P<0.05$) between Indigenous and Broiler in Thigh. However significant difference ($P<0.05$) was observed between Gramasree and Gramapriya and also in broiler chickens Ross (308) and Vencobb (430). K.Sangilimadan et al. (2020) who reported that 14.48% of high yield in Indigenous breed Nandanam Broiler 3 which is comparatively lower than the current study that may be due to difference in age and Weight of birds.

Skinless (S/L) Drumsticks: The mean ± S.E value of Drumstick from Indigenous chicken in Gramasree is 19.15% and in Gramapriya is 17.51%. The mean ± S.E value of Drumstick from Broiler chicken in Ross (308) is 16.17% and in Vencobb (430) is 14.36%. The analysis revealed that a significant difference ($P<0.05$) between Indigenous and Broiler in Drumstick. However significant difference ($P<0.05$) was observed between Gramasree and Gramapriya and also broiler chickens Ross (308) and Vencobb (430).

The mean value of drumstick in Gramasree and Gramapriya was 19.15% and 17.51% then in Ross (308) and Vencobb (430) was 16.17% and 14.3%.The analysis of variance revealed a significant difference ($P<0.05$) between Indigenous and Broiler in Drumstick. However significant difference observed between Gramasree and Gramapriya and also Broiler chicken Ross (308) and Vencobb (430). Our findings were in accordance with the yield results of Packard (2014) who also reported that Indigenous breed naked-Neck had drumstick percentage yield of 17.3% during quantitative analysis. Sangilimadan et al. (2020) also concluded that 14.77% of drumstick yield in Indigenous Nandanam Broiler 3 that is similar to our study of drumstick in Vencobb (430).

Wings: The mean ± S.E values of Wings from indigenous and Broiler chickens are presented in table no:5 and figure no:5. The mean ± S.E value of Wings from Indigenous chicken in Gramasree is 12.96% and in Gramapriya is 15.84%. The mean ± S.E value of Wings from Broiler chicken in Ross (308) is 14.78% and in Vencobb (430) is 12.86%.

The analysis revealed that is a significant difference (P<0.05) between indigenous and Broiler in wings but no significant difference (P>0.05) Gramasree and Vencobb (430). However significant difference (P<0.05) was observed between Gramasree and Gramapriya and also in broiler chickens Ross (308) and Vencobb (430). Similar results and values were reported by Rajkumar et al. (2020) who also stated that small (S- 14.5%) and medium fast-growing (M-14.4%) Broiler birds had higher wing yields than the fast-growing Broiler (F-12.8%) birds (P<0.05) that are in concurrence with present study in Weight of Broiler birds. Also Khan et al. (2019) findings also reported the wing percentage was higher in Aseel female (6.72%) in comparison to Broiler females (5.37%) which were in agreement with current study results.

CONCLUSION

Based on the results of the present study, analysis of variance revealed that a significant difference was observed (P<0.05) in between Indigenous and Broiler chickens in dressing percentage, Breast, Thigh, Skinless Drumsticks and wings. The dressing percentage will vary based on nutritional composition of feed, age of slaughter, rearing pattern and physical activity of birds. Meat contribution in Broilers was high due to its genetic selection and quality of feed. The false myth present in Broiler industry as utilization of hormones to improve growth was not economically feasible at farm conditions in comparison to production cost.

Indigenous breeds act as excellent revenue source for rural farmers and also meet their regular protein demand of family members without any additional rearing cost. Supplementation of low cost and balanced nutritive diet for Indigenous chickens will also helps rural farmers to improve Weight in a short period. Further research work and sincere efforts were need of hour to improve the genetic diversity of Indigenous native chickens for improvement of economic traits.

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Conflict of Interest: None.

Authors Contribution:

The first author named is lead and corresponding author who designed research work and provided technical guidance in each and every step of processing methodologies. He also involved in preparation and correction work of manuscript. All authors were involved in experiment procedures during the course of research work.

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