Study on carcass composition and yield of quail

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Key words: Quail, Carcass yield, Carcass composition

http://dx.doi.org/10.12692/ijb/10.3.260-264 Article published on March 25, 2017

Abstract

The study was carried out to examine the carcass yield and carcass composition of quail during the year 2012 at the department of Animal Product Technologies, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University, Tandojam. The descriptive statistics for wing, leg/thigh, chest and neck, total live body weight, carcass yield and dressing percentage of quail was also worked out. The result showed that weight of wings of quail was in the minimum and maximum range of 9.11 and 11.93g with average wings weight of 10.012±0.3154g; while the weight of leg/thigh of quail was in the minimum and maximum range of 32.75 and 36.24g with average leg/thigh weight of 34.879±0.3471g. similarly, the weight of chest of quail was in the minimum and maximum range of 27.54 and 36.23g with average chest weight of 32.944±1.781g while the weight of neck of quail was in the minimum and maximum range of 3.68 and 6.67g with average weight of 4.6778±0.335g. The live body weight of quail was in the minimum and maximum range of 67.14 and 82.00g with average live body weight of 75.337±1.8268g; while carcass yield of quail was in the minimum and maximum range of 40.77 and 52.45 g with average carcass yield of 47.531±1.2020g. Similarly, the dressing percentage of quail was in the minimum and maximum range of 60.72 and 64.80g with average dressing percentage of 63.090±0.4656 percent.

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Introduction

The quail is the smallest avian species farmed for egg and meat production and it has also assumed worldwide importance as a laboratory animal. The advantages of Japanese quail, which have been widely used for biological and genetics studies because it has a small body size, it is easily handled, and large number of birds can be kept in limited space, depending on the day length, some females start laying at 35 days of age (average 40 days) and are in full production by 50 days of age and having a short generation interval such as its ability to produce 3 to 4 generations per year, make it an interesting laboratory animal. Because of this, they are an economic animal model for research. *Coturnix* eggs are characterized by a variety of color patterns, ranging from dark brown, blue, and white to buff, each heavily mottled with black, brown, and blue. Average weight of a *Coturnix* egg is approximately 10 grams (about 8% of the hen’s body weight). Some of the estimated genetic parameters for various traits of domestic Japanese quail were reported by several researches.

The Japanese quail originally domesticated around the 11th century as a pet song bird has gained in value as a food animal since. Several aspects account for the utility of this bird. First, it has attained economic importance as an agricultural species producing eggs and meat that are enjoyed for their unique flavor. Quails are known for their early maturity and high rate of laying eggs. In most of the breeds, normal body and sexual organ development take place within 6 weeks of age.

A number of factors influence the rate of egg production, such as breed, inbreeding, age, photoperiod, temperature, oxygen content of the air, and balanced diet. Egg production is important in Japan and Southeast Asia, while meat is the main product in Europe. Second, the low maintenance cost associated with its small body size coupled with its short generation interval, (3-4 generation per year), resistance to disease and high egg production, rendered it an excellent laboratory animal. Third, Japanese quail is also the smallest avian species farmed for meat and egg production.

Materials and methods

A total 09 number of adult quails purchased from local market of Hyderabad were brought to the laboratory of department of animal Products Technology, Faculty of Animal Husbandry and veterinary Sciences, Sindh Agriculture University Tandojam. Each live bird was weighed and slaughtered by Halal method to ensure complete bleeding. The feathers, neck, edible and inedible viscera (head, preen, gland, feet, lungs, gizzard and liver) were removed. Finally carcass was weighed to observe the carcass yield.

Analysis of carcass composition

Wing, leg/thigh, chest and neck parts of carcass were weighed separately to evaluate the carcass composition of quail bird.

Statistically Analysis

The obtained data was analyzed using the computer program named (SPSS, 2003).

Results

The present studies were conducted during the year 2012 to examine the carcass yield and carcass composition of quail, at the department of animal Products technology, Faculty of Animal Husbandry and veterinary Sciences, Sindh Agriculture University Tandojam. The descriptive statistics for wing, leg/thigh, chest and neck, total body weight, carcass yield and dressing percentage of quail was also worked out, and the results are reported in Table 1 and Table 2.

Carcass composition of quail

The carcass components were separately examined and the results are presented in Table-1 and its analysis of variance as Appendix-I. The analysis of variance suggested highly significant (P=0.0000) differences in the carcass composition of quail. The data indicated that weight of wings of quail was in the minimum and maxium range of 9.11 and 11.93 g with average wings weight of 10.01± 0.3154g; while the weight of leg/thigh of quail was in the minimum and maximum range of 32.75 and 36.24g with average leg/thigh weight of 34.879±0.3471g. Similarly, the weight of chest of quail was in the minimum and
maximum range of 27.554 and 36.23g with average chest weight of 3.944±1.781g; while the weight of neck of quail was in the minimum and maximum range of 3.68 and 6.67g with average neck weight of 4.6778±0.3351g.

Table 1. Carcass composition (%) of quail.

| Carcass components | Minimum | Maximum | Mean     | S.E. ±  
|--------------------|---------|---------|----------|--------
| Wing               | 9.1100  | 11.9300 | 10.012   | 0.3154 |
| Leg/Thigh          | 32.750  | 36.240  | 34.879   | 0.3471 |
| Chest              | 27.540  | 36.230  | 32.944   | 1.0781 |
| Neck               | 3.6800  | 6.6700  | 4.6778   | 0.3351 |

SE± = 0.8644
LSD 0.05 = 1.7608

Carcass yield of quail
The carcass yield and other related parameters of quail were individually examined and that data are shown in Table-2 and its analysis of variance as Appendix-II. The analysis of variance suggested highly significant (P=0.0000) differences in the carcass yield of quail. The data indicated that live body weight of quail was in the minimum and maximum range 67.14 and 82.00g with average live body weight of 75.337±1.8268g; while carcass yield of quail was in the minimum and maximum range of 40.77g and 52.45g with average carcass yield of 47.531±1.2020g. Similarily, the dressing percentage of quail was in the minimum and maximum range of 60.72 and 64.80 percent with average dressing percentage of 63.090±0.4656 percent.

Table 2. Carcass yield of quail.

| Carcass yield | Minimum | Maximum | Mean     | S.E. ±  
|---------------|---------|---------|----------|--------
| Live weight (gm) | 67.140  | 82.00   | 75.337   | 1.8268 |
| Carcass yield (gm) | 40.770  | 52.450  | 47.531   | 1.2020 |
| Dressing       | 60.720  | 64.800  | 63.090   | 0.4656 |

S.E± = 1.8255
LSD 0.05 = 3.7677

Discussion
The study was carried out to examine the carcass yield and carcass composition of quail during the year 2012 at the department of Animal Product Technologies, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University, Tandojam.

The descriptive statistics for wing, leg/thigh, chest and neck, total live body weight, carcass yield and dressing percentage of quail was also worked out.

The result showed that weight of wings of quail was in the minimum and maximum range of 9.11 and 11.93g with average wing weight of 10.012±0.3154g; while the weight of leg/thigh weight of 34.879±0.3471g. Similarly, the weight of chest of quail was in the minimum and maximum range of 27.54 and 36.23g with average chest weight of 32.944±1.781g; while the weight of neck of quail was in the minimum and maximum range of 3.68 and 6.67g with the average neck weight of 4.6778±0.3351g. The live weight of quail was in the minimum and maximum range of 67.14 and 82.00g with average live body weight of 75.337±1.8268g; while carcass yield of quail was in the minimum and maximum range of 40.77g and 52.45g with average carcass yield of 47.531±1.2020g. Similarly, the dressing percentage of quail was in the minimum and maximum range of 60.72 and 64.80 percent with average dressing percentage of 63.090±0.4656 percent.

These results are further confirmed by Imik et al., (2010) who reported that the live body weight, carcass weight and dressing percentage of Japanese quail differed significantly between birds. Khaldari et al., (2010) reported that there was a significant difference for BW and carcass weights but not for carcass percentage components between sexes. Females showed higher Fig.s than male. There was a strong genetic correlation between 4-wk BW and carcass traits that suggests that early 4-wk BW can be used as a selection criterion to improve carcass traits. Also, intense selection resulting in high rates of inbreeding might result in decreased response selection due to inbreeding depression. Narinc et al., (2010) reported that direct selection for total carcass weight would increase its component traits.

There were moderate to high negative genetic relationships between male and females. Cori et al., (2009) indicated that slaughter of quails are appropriate at 42-45 days, since it enables the producer to obtain profits while satisfying consumer's expectations,
with the application of the electrical stunning to guarantee the animal’s welfare without being detrimental to the characteristics of the carcass. Marks et al., (2009) that carcass composition determination revealed significant (P<.05) age and line effects. Both percentage ash and protein increased from hatch to 14 days and thereafter remained constant.

However, percentage water and total lipid demonstrated contrasting responses to increasing age; percentage water declined whereas percentage total lipid increased. Merkley and Garwood (2009) found that there were no differences in carcass fat or protein among the dietary treatments. Abdominal fat pad weights were larger in the heavier HD line but were not significantly affected by cimaterol.

Abdominal adipocyte diameters were significantly larger in HD and cimaterol-treated quail. Darden and Marks (2008) concluded that abdominal fat and carcass lipid levels were greater in H than L lines, with the magnitude of the difference greater in the SD environment, indicating that the SD may be a better environment than the CD environment for the study of abdominal fat and carcass lipids in Japanese quail. Hazim et al., (2008) revealed that adding fish and flax oils to the diet of Japanese quail have a significant effect on carcass efficiency.

Therefore, fish and flax oils could be used as a good tool for improving carcass yield of quails. Lotfi et al., (2008) indicated that the percentage of breast intramuscular fat is heritable trait and selection for increasing BW and decreasing abdominal and subcutaneous fats will improve carcass composition and breast meat quality in Japanese quail.

In addition, selection against abdominal and subcutaneous fat does not change intramuscular fat and the quality of breast meat. Sezai et al., (2008) reported that there were significant differences among the line in respect to body weight and carcass weight. Highest and lowest body weight and carcass weight were measured in HL and LL lines, respectively. While there were no significant differences among the lines in terms of relative proportion of breast, the sex affected significantly (P<0.01). No significant differences were found in terms of left wing, right wing, neck and back percent of body weight for lines and sexes. Also, there were found significant correlations among the carcass traits. Correa et al., (2007) reported no difference concerning the results of feed consumption, feed efficiency, mortality, body weight, carcass weight, carcass yield and breast percentage were observed among the groups. Genetic group D showed higher values for wings, legs and breast meat percentage.

It was concluded that there are difference of performance and carcass and parts yield among the quail genetic groups selected for meat production presented on Brazilian market. Sahin and Kucuk (2007) concluded that a combination of 250mg of vitamin E and 0.2mg of Se provides the greatest performance in Japanese quails reared under heat stress and this combination can be considered as a protective management practice in Japanese quail diets, reducing the negative effects of heat stress.

Conclusion
It has been concluded from present study that no any significant difference was seen in quails carcass yield and composition.

References


