



## Short Communication

# Comparative Analysis of Carcass Traits of Two Meat Quail Breeds (*Coturnix coturnix*)

Jun Yan Bai\*, Zhi Hao Dong, Shu Juan Zhao, Ying Lei, You Bing Yang, Heng Cao and Kun Peng Shi

College of Animal Science and Technology, Henan University of Science and Technology, 263 Kaiyuan Avenue, Luolong District, Luoyang City, Henan Province, China, 471023, China

### ABSTRACT

The purpose of this study is to compare and analyze the carcass traits of french giant meat quail and savimant meat quail in order to provide reference for breeding and improvement of meat quail. The results show that french giant meat quail shows far higher body weight, carcass weight, carcass net weight, breast muscle weight (total), leg muscle weight (single) and leg muscles rate compared to savimant meat quail ( $P < 0.05$ ). Moreover, heart weight, liver weight, slaughter rate, whole net carcass rate, heart rate and breast muscle rate of french giant meat quail are slightly higher than those of savimant meat quail ( $P > 0.05$ ). For savimant meat quail, carcass weight shows extremely significantly positive correlations with carcass net weight, heart weight, liver weight, breast muscle weight (total), leg muscle weight (single), slaughter rate and whole net carcass rate ( $P < 0.01$ ), the correlation coefficients are 0.988, 0.596, 0.557, 0.926, 0.899, 0.467 and 0.706, respectively. For the french giant quail, carcass weight shows extremely significantly positive correlations with carcass net weight, liver weight, breast muscle weight (total), leg muscle weight (single) and slaughter rate ( $P < 0.01$ ), the correlation coefficients are 0.949, 0.410, 0.863, 0.590 and 0.395, respectively.

### Article Information

Received 01 April 2020

Revised 18 May 2020

Accepted 22 May 2020

Available online 15 October 2021

### Authors' Contribution

JYB conceived and designed the study and conducted the lab work. YL and SJZ analyzed the data and wrote the article. ZHD and YBY helped in sampling. KPS and HC helped in analysis of data.

### Key words

*Coturnix coturnix*, French giant meat quail, Savimant meat quail, Carcass traits, Breast muscle weight

Quail (*Coturnix coturnix*) cultivation is characteristic of small investment, small scale, short growth period and short earning cycle. Hence, it is highly appreciated by farmers and enjoys a promising market development prospect. According to comparative analysis of Beijing Food Research Institute on nutrients between 100g quail meat and 100g chicken, quail meat contains 22.2% proteins, which is higher than that in chicken (21.5%). Besides, quail meat contains 20.4mg Ca, 277.1mg P, 6.2mg Fe which are significantly higher than those in chicken (11.0mg, 190.0mg and 1.5mg, respectively). Besides, quail which has smaller size than other poultries can be used as a good new type of test animal. Quail also can be used as experimental animals in multiple subjects, such as poultry propagation, histology, nutriology, hemadenology, embryology, physiology and pharmacology (Li *et al.*, 2019; Bai *et al.*, 2016a, b, c, d, 2017, 2020a). The purpose of this study is to compare and analyze the carcass traits of french giant meat quail and savimant meat quail in order to provide reference for breeding and improvement of meat quail.

### Materials and methods

60 samples of french giant meat quail and savimant

meat quail were collected, respectively. The culture room was provided with 24h lights and quail were allowed to drink water and eat freely throughout the experiment. Fodders were supplemented artificially on the morning and evening every day. The culture temperature and humidity were determined according to culture management requirements.

At the end of culture experiment (5 weeks old), quail samples were killed by jugular vein bleeding, removed hairs and then dissected. Weights of all parts were measured by an electronic scale. The carcass traits measured included body weight, carcass weight, carcass net weight, heart weight, liver weight, breast muscle weight (total) and leg muscle weight (single).

### Results and discussion

As can be seen from Figure 1, the results show that french giant meat quail shows far higher body weight, carcass weight, carcass net weight, breast muscle weight (total), leg muscle weight (single) and leg muscles rate compared to savimant meat quail ( $P < 0.05$ ). Moreover, heart weight, liver weight, slaughter rate, whole net carcass rate, heart rate and breast muscle rate of french giant meat quail are slightly higher than those of savimant meat quail ( $P > 0.05$ ). Bai *et al.* (2020b) showed that the body weight of 3-5 week old french giant meat quail

\* Corresponding author: junyanbai@163.com  
0030-9923/2021/0006-2489 \$ 9.00/0  
Copyright 2021 Zoological Society of Pakistan

was significantly higher than that of savimalt meat quail ( $P < 0.05$ ). The results of this study were similar to those of Bai *et al.* (2020b). Wei *et al.* (2011) demonstrated that body weight of Fengxian line of french giant meat quail reached 141.67g at the 4<sup>th</sup> week, while body weight of Wuxi line reached 177.63g. In the present study, body weight of French giant meat quail at the 5<sup>th</sup> week reached 146.13g, which is slightly lower than that reported by Wei *et al.* (2011).

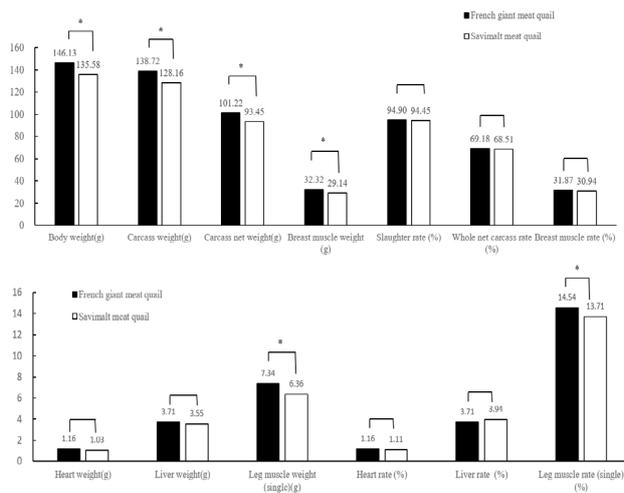


Fig. 1. Comparative analysis of 5-week-old carcass traits of french giant meat quail and savimalt meat quail.

\* indicates significant difference ( $P < 0.05$ ), while others indicate no significant difference ( $P > 0.05$ ).

Body weight of savimalt meat quail has extremely significantly positive correlations with carcass weight, carcass net weight, heart weight, liver weight, breast muscle weight (total), leg muscle weight (single) and whole net carcass rate ( $P < 0.01$ ), the correlation coefficients are 0.998, 0.988, 0.600, 0.564, 0.926, 0.906 and 0.701, respectively (Supplementary Table I). Carcass weight also has extremely significantly positive correlations with carcass net weight, heart weight, liver weight, breast muscle weight (total), leg muscle weight (single), slaughter rate and whole net carcass rate ( $P < 0.01$ ), the correlation coefficients are 0.988, 0.596, 0.557, 0.926, 0.899, 0.467 and 0.706. Carcass net weight has extremely significantly positive correlations with heart weight, liver weight, breast muscle weight (total), leg muscle weight (single), slaughter rate and whole net carcass rate ( $P < 0.01$ ), the correlation coefficients are 0.609, 0.516, 0.954, 0.895, 0.436 and 0.798, respectively.

Body weight of french giant meat quail shows extremely significantly positive correlations with carcass weight, carcass net weight, liver weight, breast muscle

weight (total) and leg muscle weight (single) ( $P < 0.01$ ), with correlation coefficients amounted to 0.996, 0.947, 0.395, 0.865 and 0.593. Besides, carcass weight shows extremely significantly positive correlations with carcass net weight, liver weight, breast muscle weight (total), leg muscle weight (single) and slaughter rate ( $P < 0.01$ ), with correlation coefficients amounted to 0.949, 0.410, 0.863, 0.590 and 0.395. Carcass net weight has extremely significantly positive correlations with breast muscle weight (total), leg muscle weight (single), slaughter rate and whole net carcass rate ( $P < 0.01$ ), with correlation coefficients amounted to 0.892, 0.578, 0.364 and 0.547.

#### Acknowledgements

Sincere gratitude goes to the sponsor of National Natural Science Foundation (31201777) and Industry-University-Research Cooperation Project in Henan Province (152107000095.0).

#### Supplementary material

There is supplementary material associated with this article. Access the material online at: <https://dx.doi.org/10.17582/journal.pjz/20200401090428>

#### Statement of conflict of interest

The authors have declared no conflict of interest.

#### References

- Bai, J.Y., Cao, H., Yang, S., Pang, Y.Z., Jiang, M.J., Fan, H.D., Fu, X.Y., Zhang, J.Y. and Shi, H.J., 2020a. *Indian J. Anim. Res.*, **54**: 392-395.
- Bai, J.Y., Pang, Y.Z., Qi, Y.X., Zhang, X.H. and Yun, X.Y., 2016a. *Brazilian J. Poult. Sci.*, **18**: 27-32. <https://doi.org/10.1590/1806-9061-2015-0124>
- Bai, J.Y., Pang, Y.Z., Qi, Y.X., Zhang, X.H. and Yun, Y.X., 2017. *Indian J. Anim. Res.*, **51**: 851-855.
- Bai, J.Y., Pang, Y.Z., Wu, S.J., Yu, M.Q. and Zhang, X.H., 2016b. *Indian J. Anim. Res.*, **50**: 1-7.
- Bai, J.Y., Pang, Y.Z., Zhang, X.H. and Li, Y.X., 2016c. *Brazilian J. Poult. Sci.*, **18**: 91-93. <https://doi.org/10.1590/1806-9061-2015-0177>
- Bai, J.Y., Pang, Y.Z., Zhang, X.H., Yun, Y.X. and Qi, Y.X., 2016d. *Brazilian J. Poult. Sci.*, **18**: 519-524. <https://doi.org/10.1590/1806-9061-2015-0101>
- Bai, J.Y., Wu, X.H., Yang, S., Pang, Y.Z., Cao, H., Fan, H.D., Fu, X.Y., Shi, K.P. and Lu, X.N., 2020b. *Pakistan J. Zool.*, **52**: 1165-1167. <https://doi.org/10.17582/journal.pjz/20190402080453>
- Li, Y.X., Zhang, X.H., Pang, Y.Z., Qi, Y.X. and Zhao, S.J., 2019. *J. Poult. Sci.*, **56**: 84-90. <https://doi.org/10.2141/jpsa.0180058>
- Wei, L.X., Wang, F.Q. and Dai, L.Q., 2011. *Shanghai Anim. Husband. Vet. Commun.*, **4**: 39.