

IMPACT OF SEMEN QUALITY OF ASEEL CHICKEN ON INDUCED MOLTING

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ABSTRACT: Indigenous chickens are an important source of animal proteins. Aseel is the very famous chicken breed of Pakistan which is facing the reproductive issues. Molting is economically used for the improvement of reproductive performance of male rosters. So the current experiment was designed to investigate the effect of molting on semen quality of indigenous Aseel chicken. Roosters (n=20) were divided into two groups, Group A molted (n=10) and group B non-molted (control) (n=10). Molting was performed through the method of feed restrictions. After the molting phase, semen was analyzed for six weeks. The semen quality was significantly (P<0.05) improved in terms of volume (0.34±0.8 & 0.16±0.4 ml), mortality (73.7±2.5 & 63.5±2.2%), semen concentration (3.36±1.2 & 1.63±0.2 x 115/ml), morphological defect of sperm, (6.5±0.5 & 8.7±0.6 %) and livability of sperm (75±2.3 & 64±2.5%) were significant (P< 0.05) better for group A as group B. It was concluded that molting could be used for improvement of semen quality of indigenous Aseel chicken to cover the reproductive problems.

Key Words: Aseel chicks, Semen quality, Molting & Non-Molting

ORIGINAL ARTICLE
 pii: S222877011600018-6
 Received 30 Oct. 2016
 Accepted 20 Nov. 2016

INTRODUCTION

Poultry is the 2nd largest industry of Pakistan whose play a dynamic role in the GDP of the country (Hussain , 2015, FAO, 2011). Poultry production is mainly dependent upon traditional extensive production system using native breeds (Ani, 1990). Indigenous chickens are an important source of animal proteins (Roberts et al., 1999). The word Aseel is derived from Arabic which means "pure" or "thoroughbred". The Aseel chicks breed has some advantages as compared to another indigenous breed. In Pakistan, Aseel, Naked-neck, Desi, and Fayoumi are reared as backyard chickens mainly for the source of protein and income (Usman et al., 2014). It is very famous among all of them which are mostly reared in the rural area of Pakistan. Due to their poor fertility and hatchability percentage, there is no commercial farming of it. It is also reared as the game bird for fighting purpose (Jabbar et al., 2015). Aseel is famous for its majestic gait, pugnacity, its stamina and dogged properties (Jabbar et al., 2015). Its immune system is much enhanced against diseases as compared to other native breeds (Jatoi et al., 2014). Its eggs and meats contain rich protein, iron and amino acids (Mohan et al., 2008).

However, Aseel breed is facing the problems of poor growth rate, late maturity, less persistence and number of egg production, broodiness and low fertility and hatchability rates (Amjad et al., 2012). The low fertility may be due to the poor semen quality and there is no baseline data available about semen quality of Aseel. The reproductive capacity of chicken male's starts to decline after 50 weeks of age so molting could be used to regain their reproductive capacity. The current experiment was designed to evaluate the effects of molting on semen quality of native Aseel chicken.

MATERIALS AND METHODS

Selection of site/Roosters

The current experiment was designed at Sadiq R & D farm Mandra District Rawalpindi. For this purpose Aseel roosters (n=20) having 2-2.5 kg body weight and 1-1.5 years of age were selected on the basis of early semen quality and caged individually. Male Aseel were divided into two groups group A molted (n=10) and group B non-molted (control) (n=10).

Feeding Procedure

For the group A, molting was performed by withdrawal daily feed intake of maize up to 60gram. Water was proved *ad libitum* through automatic nipple system. During the entire study, artificial light was avoided for whole molting period of 6 weeks. While group B non-molted was provided 16 hours artificial full light as such water was proved *ad libitum* through automatic nipple system. Feed with 110 grams/ rooster were provided daily once a day.

Collection of Semen

A collection of semen was performed once (Thursday) in a week by performing the abdominal massage as documented (Riaz et al., 2004) for six weeks. Semen was collected very carefully to avoid stress. Only without blood, urine and feces semen were recommended for further analysis. Insulin syringe was used to measure of semen.

Analyzing of Semen Quality

After collection of semen to ensure and check the quality and mortality semen were sent to the laboratory for evaluation. Placed drop of fresh semen on sterilized glass slide having a temperature of 38 °C and covered with glass cover slip. Mortality was observed through the light microscope under 100X. Five trials were performed before taking final decision. Dilution rate was remaining 1:500 as documented (Riaz et al., 2006). To identify the spermatozoa stander staining technique were used using eosin-nigrosin.

Statistically Analysis

Statistical analysis of data collected in this student's T-Test was performed using the statistical software SAS (version 9.2).

RESULTS AND DISCUSSION

The significant difference ($P < 0.05$), was observed for volume, concentration, mortality, livability and morphological defects in molted and non-molted. Volume of semen (0.34 ± 0.8 & 0.16 ± 0.4 ml), mortality (73.7 ± 2.5 & $63.5 \pm 2.2\%$), semen concentration (3.36 ± 1.2 & $1.63 \pm 0.2 \times 115/\text{ml}$) and livability of sperm (75 ± 2.3 & $64 \pm 2.5\%$) were significant ($P < 0.05$) better for group A (molted males) as group B (Non-molted males). Significantly ($P < 0.05$) (6.5 ± 0.5 & 8.7 ± 0.6 %) better results were recorded for group A as compare to group B in term of morphological defect of sperm showed in Table 1.

Table 1 - Impact of semen quality of Aseel chicken on induced molting

Parameters	Group A (Molted Males)	Group B (Non-Molted Males)
Volume (ml)	0.34 ± 0.8^a	0.16 ± 0.4^b
Concentration ($\times 115/\text{ml}$)	3.36 ± 1.2^a	1.63 ± 0.2^b
Mortality %	73.7 ± 2.5^a	63.5 ± 2.2^b
Livability (%)	75 ± 2.3^a	64 ± 2.5^b
Morphological defects (%)	6.5 ± 0.5^a	8.7 ± 0.6^b

^{a,b} denote the difference between semen quality of molted and non-molted groups ($P < 0.05$)

Molting is the complex physiological procured which directly enhanced the reproductive and endocrine system of males (Khan, 2011). Molting in males is economical better and commonly practiced in broiler breeders. The current experiment shows that semen quality in terms of volume, concentration, motility, live sperms and morphological defects was improved ($P < 0.05$) by the molting in Aseel chicks. Similar results were documented by (Khan et al., 2012) where in broiler breeder, molting enhances the semen quality and fertility.

CONCLUSION

On the basis of available literature, it can be concluded that Aseel chicken has the great potential to be improved for growth-related traits. It was concluded that semen quality is improved by the process of inducing molting in Aseel chicks.

Acknowledgments

The author is thankful to Director of Sadiq Poultry (Pvt) limited Mr. Salman Sadiq and professor Dr. Rehana Shahnawaz and Engr. Shahzad Yousaf for their full support, motivation, fruitful suggestions and encouragement during the whole period of research work.

Competing interests

The authors declare that they have no conflict of interest with respect to the research, authorship, and/or publications of this article.

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