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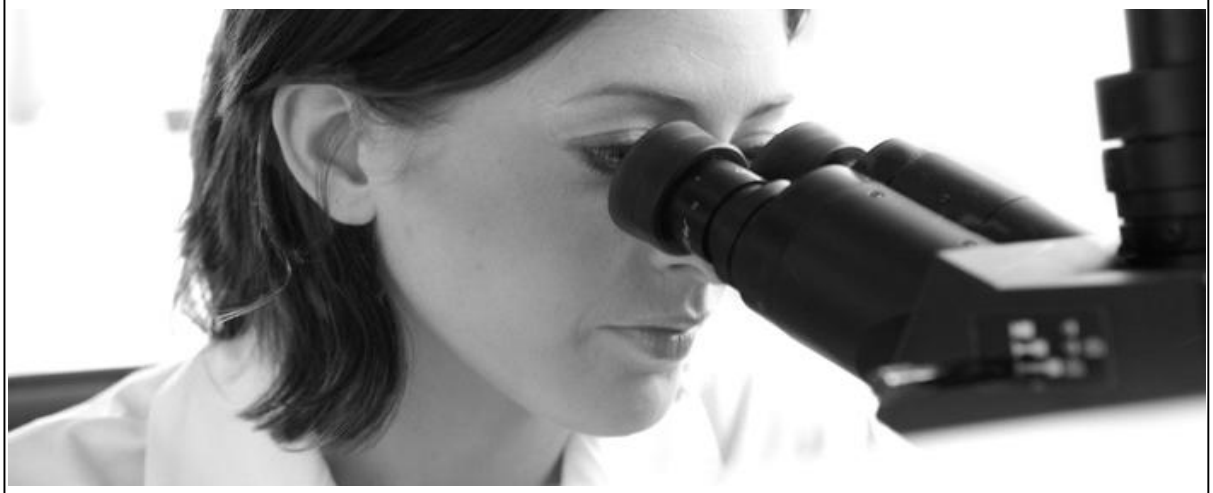

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RESEARCH ARTICLE

A STUDY ON QUALITY TRAITS OF CHICKEN EGGS COLLECTED IN AND AROUND GANNAVARAM, KRISHNA DISTRICT IN DIFFERENT SEASONS

Veena D*., Eswara Rao B., Naga Mallika E and Azad S.A.K

Department of LPT, NTR College of Veterinary Science, Gannavaram, Andhra Pradesh

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ABSTRACT

The present study was carried out to evaluate the quality traits of chicken eggs collected from local markets present in and around Gannavaram, Krishna district, Andhra Pradesh in two different seasons i.e summer and winter. A total of 120 eggs were analyzed for external and internal qualities in each season. Egg weights varied markedly with season, tending to a larger in winter and smaller during periods of high temperature and the mean values of egg weights in winter and summer were 54.3 and 52.34 respectively. The mean values of shell thickness in winter and summer were 0.269 and 0.247 respectively indicating that the shell thickness was more during winter than summer. Specific gravity of egg in winter and summer were 1.0816 and 1.0806 respectively representing more value in winter. Shell weight of chicken eggs in winter and summer were 4.514 and 4.190 respectively varying with significant difference. Results showed that traits like egg weight, shell thickness, shell weight, specific gravity were significantly ($p<0.05$) higher in winter than summer and no seasonal difference was observed in quality traits like Haugh unit, shape index, yolk index and albumen index.

INTRODUCTION

Egg is a power house of nutrition. It is the cheapest source for balanced food as it contains all the protein, vitamins (except vitamin C) and minerals essential for good health. Eggs are fragile commodities and the quality begins to decline as soon as it is laid. Many factors affect egg quality, for instance: hen age induced moulting, climate, environmental effects and nutrition. Egg quality is the characteristics of an egg that affect its acceptability to the consumer (Stadelman, 1995). Nowadays, concern about egg quality is growing steadily.

The overall quality of the chicken egg is determined by the egg external quality and egg internal quality. The appearance of the egg is important for consumer appeal. In fact, external quality is based on egg size, egg specific gravity, shell colour, shell deformation, shell weight, percentage shell and shell thickness (Roberts, 2004). Interior egg quality is based on albumen quality, yolk quality, haugh unit and the presence of blood or meat spots (Jacob *et al*., 2000). The purpose of the egg grading is to sort the eggs into categories based on size or weight, quality factors of the shell and such internal portions of the egg as the albumen, yolk, air cell and possible abnormalities (Stadelman, 1995). The main objective of the study is to evaluate the quality traits of chicken eggs collected from local markets present in and around Gannavaram , Krishna district, Andhra Pradesh and to study the seasonal variation in egg quality i.e summer and winter.

MATERIAL AND METHODS

The study was conducted in the department of livestock products and technology, NTR College of veterinary science, Gannavaram. A total of 120 eggs were collected, 60 eggs from each. Eggs were randomly selected and on average six eggs were sampled from single place (market or layer farm). While collecting the eggs, effort was made to know about the storage method, time when the eggs were laid and mode of transportation from farm to the market.

External quality

The external egg quality parameters such as egg weights were taken by weighing on a digital balance (EK200G). Other parameters such as egg length and egg width were measured with a vernier calliper in centimetres. Egg shape index, which can be easily described in terms of the ratio of the maximum width and length. A normal egg will have a shape index of 72 (Range 70-74).

Shape index = (Average width / Average length) x 100

*Corresponding author: **Veena D**
Department of LPT, NTR College of Veterinary Science, Gannavaram, Andhra Pradesh

Shell weight: To measure the weight of shell, the eggs were broken down and after removal of egg albumen, the egg shell was dried and cleaned with the help of cotton and weighed with the help of an electronic digital balance (EK200G)..

Specific gravity*:* This gives an indication of the egg shell quality, as well as its freshness.

Specific gravity = Weight of the egg in gram / Volume in cc

Internal quality: For internal egg quality traits, individual egg samples were broken out on a flat glass with disturbing the yolk. The parameters measured were:

- ***Yolk width*** - measured as the widest horizontal circumference with a vernier calliper.
- ***Yolk height*** - measured as the height of the yolk at the midpoint with a spherometer.
- ***Yolk index (%)*** - measured as the height of yolk by average width of yolk and multiplied with 100.
- ***Albumen height***-This was measured as the height of the chalazae at a point midway between thinner and outer circumference of the white with a spherometer.
- ***Albumen index (%)*** - measured as the height of albumen by average width of albumen and multiplied with 100.
- ***Shell thickness***- this is the thickness of the dry eggshell measured with a screw gauge. The mean of three points (the narrow, broad and middle) was taken as shell thickness.

Haugh unit The Haugh unit (Haugh, 1937) is a measure of egg protein quality based on the height of egg white and determined using the formula below:

$HU = 100 \log (H + 7.5\text{-}1.7W^{0.37})$

Where

HU = Haugh unit

H = height of albumen

W = egg weight (grams)

Statistical analysis was performed using One Way ANOVA to determine the differences between the quality traits of egg collected from market and farm.

RESULTS

Quality determines its acceptability to consumer. Egg quality is a general term which refers to several standards which define both internal and external quality. Present study was carried out with the view that what is the quality (internal & external) of chicken eggs available in the market in 2 different season's i.e summer and winter. The results for quality traits of the eggs are presented in Table 1.

Egg weights varied markedly with season, tending to a larger in winter and smaller during periods of high temperature and the mean values of egg weights in winter and summer were 54.3 and 52.34 respectively. A significant difference ($p<0.05$) was observed in egg weights collected in winter and summer. The mean values of shell thickness in winter and summer were 0.269 and 0.247 respectively indicating that the shell thickness was comparatively higher in winter but this difference was non-significance ($p>0.05$). Specific gravity of egg in winter and summer were 1.0816 and 1.0806 respectively representing more value in winter ($p>0.05$).

Table no: 1 the mean values of quality traits of eggs collected in two seasons

QUALITY TRAITS	Winter	Summer
Egg weight (g)	54.30±0.03	52.34±0.08
Egg width (cm)	4.11±0.07	4.09±0.05
Egg length (cm)	5.70±0.09	5.67±0.07
Specific gravity	1.0816±0.23	1.0806±0.11
Shell weight (g)	4.514±0.03	4.190±0.08
Shell thickness(mm)	0.24±0.01	0.22±0.01
Albumen height (cm)	0.73±0.04	0.72±0.03
Albumen width (cm)	7.02±0.26	7.00±0.18
Yolk height (cm)	1.67± 0.10	1.62±0.07
Yolk width (cm)	3.85±0.09	3.81±0.13
Shape index (%)	72.10±0.05	71.99±0.07
Yolk index (%)	43.37±0.05	42.11±0.07
Albumen index (%)	10.39±0.82	10.12±0.60
Haugh unit (%)	74.37±0.83	74.11±0.75

This gives an indication of the egg shell quality, as well as its freshness. Eggs having stronger shell will have higher specific gravity than thin shelled eggs. Shell weight of chicken eggs in winter and summer were 4.514 and 4.190 respectively varying with significant difference ($p<0.05$). The Haugh unit is a measure of the internal quality of an egg. The higher the number, the better the quality of the egg (fresher, higher quality eggs have thicker whites). The Haugh unit values obtained in winter and summer were 74.37±0.83 and 74.11±0.75 respectively and found that the mean values during winter were higher than summer.

CONCLUSION

The present study provides a baseline data on quality of eggs collected from market in and around Gannavaram. Results showed that traits like egg weight, shell thickness, shell weight, specific gravity were significantly higher in winter than summer and no seasonal difference was observed in quality traits like Haugh unit, shape index, yolk index and albumen index. With increase in demand of consumption, there is a need to produce and market quality egg. Finally it was concluded that the eggs collected in winter shows better results and the quality of eggs were declined in summer may be due to improper management.

References

Ahmadi, F., and Rahimi, F. 2011. Factors affecting quality and quantity of egg production in laying hens: A Review. World Appl. Sci. 12(3): 372-384.

Alkan, S., Karabag, K., Galic, A., and Balcioglu, M.S. 2008. Predicting yolk height, yolk width, albumen length, eggshell weight, egg shape index, eggshell thickness, egg surface area of Japanese quails using various eggs traits as regressors. *Int. J. Poult*. Sci. 7(1): 85-88.

Dudusola, I. O. 2009. Effects of storage methods and length of storage on some quality parameters of Japanese quail eggs. Tropicultura. 27(1): 45-48.

Haugh, R.R. 1937. A new method for determining the quality of an egg. U.S. Egg Poultry. 39: 27-49.

Jacob, J.P, Miles, R.D., and F.B. Mather. 2000. Egg quality. University of Florida, IFAS extension.

Kumari, B. P., Gupta, B. R., Prakash, M. G., and Reddy, A.R. 2008. A study of egg quality traits in Japanese quails. Tamilnadu *J. Vet. Anim. Sci.* 4(6): 227-231.

Reddy, P.M., Reddy, V.R., Reddy, C.V., and Rap, P.S.P. 1979. Egg weight, shape index and hatch ability in Khaki Campbell duck egg. *Indian J. Poult. Sci*. 14: 26-31.

Roberts, J. 2004. Factors affecting egg internal quality and egg shell quality in laying hens. *Journal of Poultry Science.* 41:161-177.

Stadelman, W.J. 1995. Quality identification of shell eggs. In "Egg science and technology". (W.S.O.J. Cotterill, ed.). Food products Press. An Imprint of the Haworth Press, Inc. New York. London.

Tebesi, T., Madibela O. R., and Moreki J. C. 2012. Effect of Storage Time on Internal and External Characteristics of Guinea Fowl (Numida meleagris) Eggs. *J Anim Sci Adv*. 2(6): 534-542.

Tilki, M. and Saatci, M. 2004. Effects of storage time on external and internal characteristics in partridge (Alectoris graeca) eggs. Revue Med. Vet. 155(11): 561-568.

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