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EFFECT OF BREED, STORAGE TEMPERATURE AND STORAGE DURATION ON CHICKEN EGG QUALITY

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EFFECT OF BREED, STORAGE TEMPERATURE AND STORAGE DURATION ON CHICKEN EGG QUALITY

BY

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A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in fulfilment of the requirement of SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science)

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CERTIFICATION

This project entitled effect of breed ,storage temperature and storage duration is prepared by Siti Nurizzah Binti Mohd Aris and submitted to the Faculty of Agriculture in fulfillment of the requirement of the course SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science)

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ABSTRACT

This study was conducted to determine the effects of storage at 7 durations (0 or controls ,7,14,21,28,35 and 42 days) and 3 temperature levels (Chiller storage 8◦c-9◦c, cool room temperature 16◦C and room temperature 28◦C- 31◦C) on quality of village chicken and commercial layer breed eggs. 63 eggs from both of the breed were utilize. All hens were managed under battery cage system and fed with poultry layer mash.

The eggs quality determinations were based on generally are external and internal egg quality. The external parameter is weight loss meanwhile the internal egg quality factor determined were haugh unit and yolk color. There were significantly difference ($P<0.05$) for all the parameters in comparison with the control .

ABSTRAK

Kajian ini dijalankan untuk mengenalpasti kesan tempoh simpanan pada 7 tempoh (0 atau kawalan ,7,14,21,28,35 and 42 hari) dan tiga suhu yang berbeza (Simpanan di tempat sejuk 8◦c-9◦c, simpanan berhawa dingin 16◦C dan simpanan di suhu bilik 28◦C- 31◦C) terhadap kualiti telur ayam kampong dan telur ayam baka komersial. 63 biji telur daripada kedua dua baka telah digunakan. Ayam tersebut dibela dibawah system sangkar dan telah diberi makan dengan makanan ayam penelur setiap hari.

Kualiti telur ditentukan berdasarkan faktor-faktor luaran dan dalaman telur tersebut. Faktorkualiti luar yang ditentukanadalah penurunan berat manakala faktor kualiti dalaman adalah unit haugh dan warna kuning telur. Keputusan menunjukkan perbezaan-perbezaan penting (P<0.05) untuk semua parameter berbanding dengan kawalan.

CHAPTER ONE

INTRODUCTION

The egg is an avian reproduction vehicle and it is also a good source of protein for human consumption. The chicken egg is nutrition economical, easy to prepare as food, has low calories and its ease to digest. It is very suitable food at any ages.

The size and the shape of the chicken egg can differ with the nutrition, breed and ages. Hens start laying eggs at the age of 18 weeks to 20 weeks. The frequency of the hen laying the eggs is depends on the breed

Egg laying can be effected by many factor such as lack of clean water supply, poor environment, and lack of nutrition, extreme temperature, molting and health. We can. There factor can be corrected that the hen can be produce an egg.

The commercial table chicken egg is not limited to eggs of the commercial strain of layer chicken. Another type is the village chicken egg which has a niche of its own. Selling chicken eggs in Malaysia is depends on the grade of the eggs. However, grading in Malaysia is not based on the total quality but basically based on the weight of the eggs. In Malaysia, the grading of commercial table eggs is based on the weight of the egg, ranging from the highest grade AA, following by A, B,C and the lowest grade is D (Perak Department of veterinary Services ,2008). Selling of the village chicken egg is as-it-basis and not graded .This means that quality of all marketed eggs in Malaysia is not assured.

The quality of the eggs includes both of external and internal and external characteristics of the eggs. The method of storage and the environment can affect the quality of the eggs and normally the quality of egg decline with time. The declining

effect in egg quality cannot be halted totally, but the slowing down process can be done so that consumer can get the nutritional value that they should get from the egg that they eat. Factors that are normally associated with the quality loss are period of storage, relative humidity, and storing temperature and handling.

Egg contains high quality of protein and fat but merely a trace of carbohydrate and no fiber. It also has essential amino acid, provide several vitamins and minerals such as and vitamin A, riboflavin, folic acid, vitamin B6, vitamin B12, choline ,iron ,calcium, phosphorus and all of the egg's vitamin A ,D and E are in the egg yolk (Huopahlati *et al.,* 2007). So, it will be a waste if all these rich invaluable nutrients keep on deteriorating each day. It is essential that the eggs being stored with the correct technique to reduce the negative effects. It is must know of the effect of storage parameter on village chicken eggs. Therefore, a study we conducted in village chicken eggs of determines effect of certain storage parameter on its quality.

1.1 Significance of Study

The better understanding on storage parameters to maintain its quality of the egg such as storage temperature and different storage duration, will enhance that eggs of the market placed or at home can be maintain at the higher quality

1.2 Objectives

General Objective

To determine the effect of breed, storage temperature and storage duration on chicken egg quality

The specific objective:

1. To determine the suitable storage temperature and storage duration on maintains egg quality
2. To evaluate the effects of breed, storage temperature and storage duration on external and internal chicken egg quality.

REFERENCES

1. Azhar Kasim (2007). Ayam Kampung Dan Selesema Burung. http://budayamalaysia.blogspot.com/. Accessed on Januari 2011.
2. Beardsworth, P.M and J.M Hernandez, 2005. Yolk Color-an important egg quality attribute. International Poultry Production Vol. 12 no.5
3. Bell , D., 1996. Effect of temperature and storage time on egg weight loss. Poultry international 35 : PP . 56-64
4. BERNAMA, 2011 http://www.bernama.com/bernama/v5/newsindex.php?id=604358 Accessed on August 12,2016
5. Bloomberg, Federation of Livestock Farmer's Association Malaysia , 2009 http://www.flfam.org.my/main.php?section=industry&page-industrypoultryegg . Accessed on September 8,2016
6. Cunningham, F.E., D.J. Cotterill and E.M. Funk, 1960. The effect of season and age of the bird on the chemical postion of the eg white. Poultry Sci. 39 : PP. 300-308
7. Egg Analyzer™, 2011. Egg Tester-Measuring of Egg Quality. Orka Food Technology Ltd. http://www.EggTester.com . Accessed on July 14,2011.
8. FLFAM, 2011 http://www.flfam.org.my/main.php?section=industry&page=industrypoultryegg . Accessed on August 15, 2016
9. FAO (1999). Understanding the Codex Alimenterius. Italy: FAO Information Division

10. Galobart, J.,R. Sala, X.Rincon-Carruyo, E. G. Manzanilla,.B. Villa and J.Gasa,2004. Egg Yolk Color as Affected Saponification of different Pigment Sourches. J. Appl. Poult. Res 13: PP. 328-334
11. Hasin , B.M., A.J.M. Ferdaus , M.A. Islam , M.J. Uddin and M.S. Islam , 2006. Marigold and Orange Skin as Egg Yolk Color Promoting Agents. International Journal of Poultry Science 5(10): PP. 979-987
12. Hill, A.Tand W. Hall,1980. Effects of various combination of oil spraying, washing, sanitizing, storage time, strain, and age of layer upon albumen quality changes in storage and minimum sample sizes required for their measurement. Poultry Sci. 59: PP. 2237-2242
13. Huopalahti, R., F.R Lopez, M. Anton, R.SCchade (Eds.) Nutritional Evaluation of Egg Compounds In Bioactive Egg Compounds PP. 117-14.Berlin: Springer,2007.
14. North,M.O., 1978. Commercial Chicken production Manual: Formation of The Egg. AVI Publishing Company Inc. PP. 30-35
15. Phillip, J.C., 2009. Proper Handling of Eggs: From Hen to Consumption. Animal and Poultry Sciences 2902-1091
16. Robinson, D.S. 1987. The chemical basis of albumen quality. PP 171-1991 in EggQuality- Current problems and recent Advances. R. G Wells and C. G. Belyavin, ed. Butterworths, London
17. SAS institute, 1996. SAS User's Guide : Statistic Version 6.12. SAS Institute Inc. Cavy, NY.
18. Scott, T.A., and F.g. Silversides. 2000. The effect of storage and layer age on quality of eggs from two lines of hens. Poult. Sci. 80: PP. 1725-1729.

19. Silversides, F.G., and T .A. Scott. 2001. Effect of storage and layer age on quality of eggs from two lines of hens. Poult. Sci. 80: PP.1240-1245.
20. Solomon, S. E. 1991. Egg and Eggshell Quality. Wolfe Publishing, Aylesbury, England
21. Sonaiya, E,B. and S.E.J Swan. (2004). Small-scale Poultry Production. Italy: Food and Agriculture Organization of the United Nation.
22. Stadelman, W.J and Cotterill, O.J. 1977. Egg Science and Technology. Th AVI Publishing Company, Inc. PP. 1-120
23. Stadelman, W.J. and Cotterill, O.J. 1995. Egg Science and Technology. 4th edition. New York : Food products press 1995. PP. 59-60
24. Stevens, L., 1996. Egg Protein: What are their functions? Sci. Prog 79:PP 65-88
25. Tona, K., O. Onagbesan, B. De Kerelaere, E. Decuypere and V.Bruggeman, 2004. Effect of Age of Broiler Breeders and Egg Storage on Egg Quality, Hatchability, Chick Quality, Chick Weight, and Chick Posthatch Growth to Forty-Two Days. J. Appl. Poult. Res 13: PP. 10-18