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RESEARCH ARTICLE

COMPARATIVE ASSESSMENT OF EGG SANITIZING AGENTS ON THE HATCHABILITY OF KUTTANAD DUCK EGGS

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ABSTRACT

An experiment was conducted in the Department of Poultry Science, College of Veterinary and Animal Sciences, Mannuthy, Kerala Veterinary and Animal Sciences University to evaluate the hatchability of various sanitizing agents for hatching eggs of Kuttand duck (*Anas platyrhynchos domesticus*) eggs. A total of 2400 hatching eggs over a period of six weeks was collected for the study. Each treatment consisted of 600 eggs with 100 eggs per replicate. The selected eggs were randomly allotted to the various cleaning methods (dry cleaning, luke warm water wash, glutaraldehyde wash and sodium hypochlorite wash) and were examined for the effect of these treatments on hatchability. The findings of the present study revealed that the the highest hatchability percentage was recorded in eggs washed with sodium hypochlorite (T_4) followed by dry cleaning (T_1), glutaraldehyde (T_3) and luke warm water wash (T_2). Statistical analysis of data recorded no significant difference among treatments.

INTRODUCTION

Hatchability is an important economic trait and represents a major component of reproductive fitness in domestic poultry especially in waterfowls. Generally hatchability of artificially incubated duck eggs is low compared with that of chicken eggs and fluctuates during the year. The main factor that influence duck egg hatchability in artificial incubation may be the microbial contamination of eggs and a presence of dense cuticle. The microbial contamination is due to watery nature of droppings and semi intensive or extensive system of rearing of ducks. In order to control microbial populations on the shell surface of hatching eggs, a sanitizing agent is required. The presence of dense cuticle around the egg causes difficulty in oxygen flow to the embryo and the escape of carbon dioxide and water vapour from the egg. Inorder to obtain optimal hatchability and quality ducklings, embryo needs a sufficient amount of oxygen to maximize the use of yolk for body development. In this regard cuticle removal can be advocated in hatching eggs and for this sodium hypochlorite solution can be used. Hence, a study was conceived to assess the hatchability of Kuttanad duck eggs by using certain egg shell sanitizers.

MATERIALS AND METHODS

The experiment was conducted in the Department of Poultry Science, College of Veterinary and Animal Sciences, Mannuthy. Hatching eggs were obtained from a Kuttanad breeder flock of 30 to 36 weeks of age reared in semi intensive system. A total of 2400 hatching eggs over a period of six weeks were collected for the study. Each treatment consisted of 600 eggs with 100 eggs per replicate. The selected eggs were randomly allotted to the four treatments as follows.

T1- Cleaning eggs with dry muslin cloth
T2- Washing eggs with water at 40^0 C for 5 minutes
T3- Washing eggs with 0.3 per cent glutaraldehyde solution at 40^0 C for 5 minutes
T4- Washing eggs with 2500 ppm sodium hypochlorite solution at 40^0 C for 5 minutes.

Standard incubation procedure was followed after the treatment of eggs and the percentage of infected eggs, Early, mid and late embryo mortalities and the weight loss at 24th day of incubation were recorded.

RESULTS AND DISCUSSION

Statistical analysis of data showed significant ($P<0.05$) difference among treatments for the mean egg weight loss on 24th day of incubation. Egg weight loss was significantly higher in group treated with sodium hypochlorite than the other three groups which were statistically similar. The higher weight loss obtained in this study for eggs treated with sodium hypochlorite may be due to the cuticle removal property of sodium hypochlorite (Peebles *et al*., 1987). The highest hatchability percentage was recorded in eggs washed with sodium hypochlorite followed by dry cleaning, glutaraldehyde and luke warm water wash. Statistical analysis of data on hatchability recorded no significant difference among treatments. From the data it is evident that hatchability

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Table 1. The effect of egg sanitizing agents on egg weight loss, Early, Mid, Late embryo mortalities, infected egg and hatchability percentages. (Mean±SE)

Treatments	Egg weight loss percentage	Early dead embryo percentage	Mid dead embryo percentage	Late dead embryo percentage	Hatchability percentage on fertile egg set	Infected egg percentage
T_1 Dry cleaning	15.12[a]±0.38	11.83±1.14	4.83±1.2	18.83±2.60	62.48±3.01	8.17±1.68
T_2 Luke warm water	15.51[a]±0.43	12.00±1.69	6.67±2.81	23.17±2.54	53.20±4.64	12.17±1.91
T_3 Glutaraldehyde	14.61[a]±0.27	9.83±2.2	5.50±1.80	19.67±3.47	60.79±5.51	9.33±1.96
T_4 Sodium hypochlorite	17.64[b]±1.14	10.33±1.65	5.17±1.56	17.00±4.81	63.39±5.29	6.67±1.69

Mean values bearing different superscript differ significantly (P<0.05)

percentage was not altered with respect to washing and dry cleaning of eggs. However in the case of washed egg groups, numerically lowered value was observed for luke warm water wash. This may be due to increased infection and lack of sanitizing property of luke warm water. Highest early, mid and late embryonic embryonic mortalities were recorded in egg washed with luke warm water. The late embryonic mortality was lowest in sodium hypochlorite treated group while the values in the other two groups were intermediary. The values obtained in the present study for early embryonic mortality are higher than the values reported by Sarpong and Reinhart (1985) and this may be due to the infection. The percentages of mid embryo mortality and that of late embryonic mortality are in close agreement with Singh (1996) and Sarpong and Reinhart (1985) respectively. The highest infected egg percentage was recorded in eggs washed with luke warm water followed by glutaraldehyde, dry cleaning and sodium hypochlorite. Higher infected egg percentage values obtained in the present study might be due to higher moisture excreta adhering to deep litter system of rearing, which is in close agreement with Smith *et al*. (2000). The data recorded on egg weight loss on 24th day of incubation, hatchability percentages, early, mid, late embryo mortalities and the infected egg percentages are presented in Table 1.

SUMMARY

The findings of the present concluded that there were no significant differences among early, mid and late embryonic mortality patterns and also for the infected eggs among the treatments. Relatively higher infected eggs shows that commercially advocated levels of sanitizing agents may not be sufficient for controlling infection in hatching ducks obtained from semi intensive system of rearing ducks. Significantly higher water loss was obtained with sodium hypochlorite treatment but it doesn't influence the hatchability percentage. It was also concluded that the hatchability percentages obtained in the present study were fair with optimum egg weight loss achieved among treatments.

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REFERENCES

Peebles, E.D., Brake, J. and Gildersleeve, R. P. 1987. Effects of egg shell cuticle removal and incubation humidity on embryonic development and hatchability of broilers. *Poult. Sci*. 66: 834-840.

Sarpong, S. and Reinhart, B. S. 1985. Effect of spraying White Pekin duck eggs on hatchability. *Poult. Sci.* 64: 221-225.

Singh, R. A. 1996. Incubation and hatchery management. *Poultry production*. (4th ed.).102p.

Smith, A., Rose, S. P., Wells, R. G. and Pirgozliev, V. 2000. The effect of changing the excreta moisture of caged laying hens on the excreta and microbial contamination of their egg shells. *Br. Poult. Sci*. 41: 168-173.

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