



# A STUDY ON THE FUNGAL CONTAMINATION OF COMMERCIALY AVAILABLE CHICKEN EGGS IN THRISSUR

Joby Elizabeth John<sup>1</sup>, C. Sethulekshmi<sup>2</sup>,  
C. Latha<sup>3</sup>, K. Vrinda Menon<sup>4</sup>,  
S. Sankaralingam<sup>5</sup> and Gleeja V.L.<sup>6</sup>

Department of Veterinary Public Health  
College of Veterinary and Animal Sciences,  
Mannuthy, Thrissur-680651.

Received : 30.06.2016  
Accepted : 05.07.2016

## Abstract

A total of 120 chicken eggs were collected randomly from retail outlets in and around Thrissur during monsoon and post monsoon season and subjected to mycological examination. The mean total yeast and mould count were  $5.87 \pm 0.11$  and  $4.45 \pm 0.15 \log_{10}$  CFU/egg shell during monsoon and post monsoon seasons, respectively.

**Key words:** Yeast and mould count, chicken eggs, season, Thrissur

Eggs are considered as natural source of high quality protein containing all essential amino acids, fat, vitamins A, D, E, choline, folate, iron, calcium, magnesium and zinc. Most of the freshly laid eggs are free of microorganisms, but may get contaminated with bacteria and fungi from litter, faeces, dust, farm environment, improper washing, packaging, storage and transportation. Periodic assessment of the quality of eggs that reach the consumers is necessary to ensure the product quality and to safeguard consumers against egg borne

illness. The present investigation was therefore planned to determine the mycological quality of commercial available chicken eggs collected from retail markets in and around Thrissur.

## Materials and Methods

A total of 120 chicken eggs were collected randomly from different retail shops in and around Thrissur. Half of the eggs were collected during monsoon season and the remaining half in post monsoon season. Eggs were brought to the laboratory in individual UV sterilized polythene covers without delay and were subjected to yeast and mould count.

Swabbing of intact eggs was done according to the procedure described by Evanchoet *al.* (2001). Serial dilution of sample was made up to  $10^{-4}$  and appropriate serial dilutions of the sample were used to obtain countable colonies after plating.

The yeast and mould count (YMC) was estimated as per the method described by Beuchat and Cousin (2001). Potato dextrose

1. M VSc Scholar
- 2,4 Assistant Professor
3. Professor and Head
5. Assistant Professor, University Poultry and Duck Farm
6. Assistant Professor, Department of Statistics.

agar was used and count estimated by spread plate technique. From the selected dilution of each sample 0.1 ml of inoculum was transferred on to duplicate plates containing the media and the inoculum was evenly distributed on the media with a sterile 'L' shaped glass rod. The plates were incubated at 25°C for three to five days. After the period of incubation the colonies in the plates were counted with the help of colony counter and mean count was multiplied with the dilution factor and expressed as  $\log_{10}$  CFU/egg shell.

The data obtained were analysed by using Analysis of variance for comparison between different seasons using the software, SPSS version 21.0.

### Results and Discussion

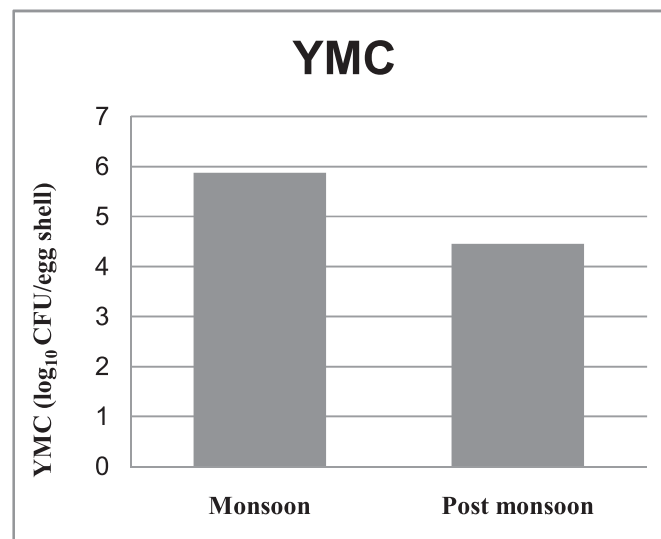
The mean YMC in chicken eggs during monsoon and post monsoon season was  $5.87 \pm 0.11$  and  $4.45 \pm 0.15 \log_{10}$  CFU/egg shell, respectively. The mean YMC of monsoon season was significantly higher ( $p < 0.05$ ) when compared to post monsoon season (Fig. 1). Statistical analysis by Analysis of variance revealed a significant difference in shell counts in monsoon than that of post monsoon season samples (Table 1).

**Table 1.** Yeast and mould counts in egg shell from retail market during two seasons

Season	Counts in $\log_{10}$ CFU/egg shell
Monsoon	$5.87 \pm 0.11^A$
Post monsoon	$4.45 \pm 0.15^B$

Figures in a column bearing same superscripts do not differ significantly ( $p < 0.05$ ). N=60 in each group

A higher value than the present study was obtained by Irene (2011) who reported mean YMC of  $4.65 \pm 0.04 \log_{10}$  CFU/egg shell in the shells of duck eggs collected from retail market in Mannuthy during post monsoon season. However the author reported a lesser value of  $3.64 \pm 0.29 \log_{10}$  CFU/egg shell during monsoon season than the present study. The results obtained in the present study were higher from that reported by Bahobail *et al.* (2012) who reported average mould count of  $1.3 \log_{10}$  CFU/ml and  $3.4 \log_{10}$  CFU/ml from the shells of processed and unwashed eggs collected from different shops in Taif city, Saudi Arabia. Caderet *et al.* (2014) also reported mean YMC of  $3.5 \log_{10}$  CFU/g in the shells of eggs collected from supermarkets in Mauritius, which is lower than the present study. Higher yeast and mould count during monsoon season in the present



**Fig. 1.** Mean yeast and mould counts in egg shell from retail market during monsoon and post monsoon season

study could be due to the excess humidity in the environment. It could be concluded that strict hygienic measures should be implemented during production, processing, transportation and storage to safeguard the quality of eggs.

**Acknowledgements:** Author wish to acknowledge the authorities of CVAS, Mannuthy for the facilities provided in carrying out this research work.

### References

- Bahobail, A.A.S., Hassan, S.A. and El-Deeb, B.A., 2012. Microbial quality and content aflatoxins of commercially available eggs in Taif, Saudi Arabia. *Afr. J. Microbiol. Res.* **6**: 3337-3342.
- Beuchat L. R. and Cousin, M. A. 2001. Yeasts and Molds. In: Downes, F. P. and Ito, K. (eds.), *Compendium of Methods for the Microbiological Examination of Foods*. (4<sup>th</sup> Ed.). American Public Health Association, Washington, D. C. pp. 209-215.
- Cader, S., Goburdhun, D. and Neetoo, H. 2014. Assessment of the microbial safety and quality of eggs from small and large-scale hen breeders. *J. World's Poult. Res.* **4**: 75-81.
- Evancho, G.M., Sveum, W.H., Moberg, L.J. and Frank, J.F. 2001. Microbiological monitoring of the food processing environment. In: Downes, F.P. and Ito, K. (eds.), *Compendium of Methods for the Microbiological Examination of Foods*. (4<sup>th</sup> Ed.). American Public Health Association, Washington, D. C. pp. 25-35.
- Irene, G.K. 2011. Microbiological quality assessment of duck egg production chain. *M.V.Sc thesis*, Kerala Veterinary and Animal Sciences University, Pookode, 147p. ■