



Sensory and microbiological evaluation of table eggs

Thesis

presented by

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(M.V.Sc., 2017)

For

Ph.D. degree

(Milk Hygiene)

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2021

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| ARABIC SUMMARY | |

List of abbreviation

| | |
|-------|---|
| ADH | arginine decarboxylase |
| AIEC | adherent invasive <i>E. coli</i> |
| AOAC | Association of Official Analytical Chemists |
| APC | aerobic plate count |
| APHA | American Public Health Association |
| ATCC | American Type Culture Collection |
| BPW | buffered peptone water |
| CFU | colony forming unit |
| DAEC | diffusely adherent <i>E. coli</i> |
| DRBC | Dichloran Rose Bangal Chloramphenicol |
| EAEC | enteroaggregative <i>E. coli</i> |
| ECDPC | European center for Disease Prevention and Control |
| EFSA | European Food Safety Authority |
| EHEC | enterohaemorrhagic <i>E. coli</i> |
| EIEC | enteroinvasive <i>E. coli</i> |
| EOSQC | Egyptian Organization for Standardization and Quality Control |
| EPEC | enteropathogenic <i>E. coli</i> |
| ETEC | enterotoxigenic <i>E. coli</i> |
| FAO | Food and Agriculture Organization |
| ISO | International Organization for Standardization |
| LDC | L-lysine decarboxylase |
| OAA | over all acceptability |
| ODC | ornithine decarboxylase |
| ONPG | 2-ortho-Nitrophenyl- β -D-galactopyranoside |
| RVS | Rappaport Vassiliadis soya |
| SMAC | sorbitol MacConkey |
| SS | <i>Salmonella-Shigella</i> |
| TBX | tryptone bile glucuronic |
| TSI | triple sugar iron |
| WHO | World Health Organization |

SUMMARY

In this study, a total of 100 egg samples (each sample 5 eggs) of commercial hen's eggs were collected from different markets, poultry farms, groceries, supermarkets and street vendors in Assiut city, Egypt. The commercial hens were represented as Baladi hens' eggs and poultry farm hens' eggs (50 samples each). The egg samples were examined for the sensory and microbiological evaluation.

Part I. Evaluation of table eggs

Sensory evaluation:

The obtained results revealed that 56% of the examined Baladi hen's egg shell samples, 82% of the poultry farm hen's egg shell samples, and all the examined Baladi and poultry farm hen's egg content samples, respectively had a relatively high score ranged from 7 to 9 according the 9 points hedonic scale.

Microbiological evaluation:

The average aerobic plate count were 1.34×10^7 , 1.83×10^6 , 1.55×10^7 and 8.55×10^5 cfu/ml in the examined Baladi hen's egg shell samples, poultry farm hen's egg shell samples, Baladi hen's egg content samples and poultry farm hen's egg content samples, respectively.

----- **SUMMARY**

The average fungi (yeasts & molds) counts were 4.05×10^3 , 1.43×10^3 , 1.65×10^3 and 1.06×10^3 cfu/ml for the examined Baladi hen's egg shell samples, poultry farm hen's egg shell samples, Baladi hen's egg content samples and poultry farm hen's egg content samples, respectively.

E. coli was isolated from 22% of the examined Baladi hen's egg shell samples, 28% of the examined poultry farm hen's egg shell samples, 8% of the examined Baladi hen's egg content samples and 4% of the examined poultry farm hen's egg content samples, respectively.

Salmonella was not isolated from all the examined Baladi hens' egg samples and also from all the examined poultry farms hens' egg content samples; but was found in 4% of the poultry farms hens' egg shell samples.

Cl. perfringens was isolated from 24% and 38% of the examined Baladi hen's egg shell samples and poultry farm hen's egg shell samples, respectively; in addition, 18% and 12% of the examined Baladi hen's egg content samples and poultry farm hen's egg content samples, respectively.

Part II. Experimental study

The counts of the inoculated *Sal. typhimurium* after different heat treatments was 8.5×10^3 , 4×10^3 and 0 cfu/ml in the pasteurized whole egg, the pasteurized egg content and the boiled egg, respectively. While, the count of the inoculated *Sal. typhimurium* in the control samples (without heat treatment) was 1.31×10^6 cfu/ml.

The count of the inoculated *E. coli* O₁₅₇:H₇ after different heat treatments was 2.86×10^6 , $<10^3$ and $<10^3$ cfu/ml in the pasteurized whole egg, the pasteurized egg content and the boiled egg, respectively. While, the count of the inoculated *E. coli* O₁₅₇:H₇ in the control samples (without heat treatment) was 8.88×10^6 cfu/ml.

When the *Sal. typhimurium* & *E. coli* O₁₅₇:H₇ were inoculated together into the egg samples, the *Sal. typhimurium* counts were 3.5×10^5 , 9×10^4 and 0 cfu/ml, respectively, and the *E. coli* O₁₅₇:H₇ counts were 4.15×10^5 , 3.53×10^6 and 0 for the pasteurized whole egg, the pasteurized egg content and the boiled egg, respectively.