دراسات عن الفطريات في البيض المص缎

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أجريت التجربة العملية على أنعمن مادة من البيض المصعد للجزء ما بعد بحثًا
من فطريات وتدليل النتائج على ما يلي:

أيضحت النتائج الظاهرة ان جميع العينات بثاب أنواع مختلفة من الفطريات الظاهرة منها
38 بـ 66.6% للفطرات طويلة تحت ظروف غير قاسية ومثل الفطريات الظاهرة أكثر من
6 % 66.6% بـ 5.7% بـ 7.2% بضخمة تحت الظروف المخفية ونسبة 0.7% بـ 8.7% بضخمة في الظاهرة.

وقد تم تجربة الفطرات الميكروبيولوجيا على البيض الذي تمثل من الفطريات الظاهرة أن به بعض-
المسببات.

ولقد تواجدت الفطريات في جميع العينات (100%) وفيها تتنوع انواع كالأيد وسوريوم
هومي جليسي (0.7%)، ميكور (10.6%)، النلافية (0.6%)، باسليوميديس (0.7%)، امبر
جليسي (0.7%) وحسنوم (0.6%)

وتتعمق في الـ 12 سيريلنس والبنسيلين تم عزل الأصبع الأسودية:...

0.7%، امبرجلينس نوير (5%)، امبرجلينس أسلوبامي (0.7%)
0.7%، امبرجلينس نوير (5%)، امبرجلينس نوير (0.7%)
0.7%، نافيك بولنس (0.7%)، بنسلين ميليس (0.7%)
0.7%، سولوسيم (0.7%)، سولوسيم (0.7%)
0.7%، بنسلين كارد يد (0.7%)
0.7%، بيرك كيت (0.7%)

هذا وقد تأثمت دراسة على أنواع الفطريات المزعجة وواقعتها بالصحة العامة...
وذلك لزيادة السلم الكلي للمحافظة على البيض من التلوث والفطريات المختلفة حفاظًا على...

من الفساد وحماية المستهلك.
Mycological Studies on Imported Hen's Eggs

(With 3 Tables)

By


(Received at 23/5/1962)

SUMMARY

A total of 40 imported hen's eggs collected from Giza market were subjected to physical and mycological examinations. The defects met with in this investigation, included faulty shell (100%), aged egg (95%), cracked shell (7.5%) and leakered egg shell (5%). 38 samples showed a discolored yolk where 2 only had a spready yolk.

The mycological study revealed that, all the examined eggs were contaminated. Group analysis of isolates showed that they belonged to 6 different species of molds: Penicillium (65%), Aspergillus (37.5%), Mucor (10%), Cladosporium (7.5%), Paecilomyces (7.5%) and Alternaria (2.5%).

Identification of isolated Aspergillus sp. showed that, the A. flavus Link was the most prevalent constituting (17.5%), while A. nidulans (Eidam) wint., and A. clavatus Des. were the least (2.5%). A. smelodendri (Hangin) Thom and Church and A. funigatus Fresenius lie in between with a frequency percentage of 7.5% and 5%, respectively. Penicillium verrucosum var. cyclopium (Westling) Samson, Stolk and Hadlok, P. chrysogenum Thom, P. candidus Link and P. frequentans Westling could be isolated from contaminated eggs with an incidence percentage of 35%, 20%, 7.5%, and 2.5% respectively.

Hygienic significance of isolates and the control measures for improving the quality of the product were discussed.

INTRODUCTION

Eggs had been used as food by human beings since early ages. The average number of eggs consumed by the individuals increases, throughout the world, coincides with rise of the standard of living and according to the flourish of poultry industry.

In Arab Republic of Egypt, although a marked pronounced increase in poultry farms, under different consumer's demand of over population for egg production, yet concerned authorities up till now, has to import a lot of eggs to compensate the deficiency in production.

It is evident that with increased inflow of eggs imported from different producers a keen hygienic measures have to be applied during handling and storage of eggs. Spoilage of imported hen's eggs due to mold growth that find their way to the egg contents as a result of faulty production, handling or storage cause economic losses. Moreover eggs contaminated with molds may at times, constitute a public health hazard (Farchmin and Scheidner 1973).


Studies on the existing molds in deteriorated imported hen's egg in our country is very limited, therefore, this work was planned to investigate the different types of molds prevailing in such hen's eggs.

MATERIAL and METHODS

40 imported hen's eggs collected at random from Giza markets, were subjected to physical and mycological examinations. Physical examination included external inspection for detection of cracks, leakers, loss of bloom and appearance of stained or dirty spots. Also, candling to detect and determine the size of air cell, colour, density and mobility of the egg contents as well as other defects was applied.
Isolation of molds:

Eggs proved to be abnormal through physical examination, were prepared for mycological examination.

Sufficient area of the shell around the air sac was removed and loopsfuls from the inner shell membrane as well as from mixed contents were directly streaked on Malt Extract Agar and Czapek-Dox Agar media. Inoculated plates were incubated for five days at 25°C before being examined. Suspected colonies were isolated on malt extract agar slopes for further identification according to RAPER and THOM (1949), KULIK (1960) and SAHSON et al. (1976) for genus Penicillium. RAPER and FENWELL (1965) and SAHSON (1979) for genus Aspergillus, and ARK (1967), ZYCH et al. (1969) and BARNETT and HUNTER (1972) for other genera.

RESULTS

The results are tabulated in Tables 1, 2 and 3.

DISCUSSION

Egg quality is linked with certain characteristics that affect its acceptability to the consumer. Some of the egg defects are obvious from their general appearance, others are detected by candling, while some defects are shown only in the inner contents after breaking.

The physical examination of eggs is of high practical importance as it gives the first aid in judging the quality of edible eggs. Its importance lies in the fact that it does not only supply evidence on the fitness of eggs for human consumption, but it also gives a valuable index of prevailing conditions in/on the eggs that govern the practical use of examined eggs.

Candling of collected eggs revealed that all samples showed faulty shell and 38 (95%) were aged (more than 6 mm air cell depth) while only 7.5% of these eggs had a cracked shell and 2.5% had leached egg shell. Sided yolk, spready yolk, rotten and moldy egg were detected in 95%, 5%, 5% and 62.5% of examined eggs respectively (Table 1). These findings indicate faulty handling and storage.

Mycological examination:

Table (2) pointed out that all eggs examined proved to be contaminated with different types of molds. The frequency distribution of isolated molds revealed that 6 different genera could be identified. Penicillium spp. was the most prevalent (65%) while Alternaria was the least (2.5%) Cladosporium, Mucor, Pseudocorynes and Aspergillus lie in between (Table 2). On further identification of genus Aspergillus, 6 species proved to exist with an incidence percentage ranging from 2.5% to 17.5%. Isolated strains, in a descending manner include: A. flavus, A. absseudalbus, A. fumigatus, A. nigres, A. nidulans and A. clavatus (Table 3).

From the public health point of view, A. fumigatus has been often incriminated as a causative agent in many infections in man and animals involving the ethmoidal maxillary, sphenoid sinuses, the orbit, pulmonary infection and skin infection (ADEM et al. 1965; JANNE 1965 and SKOBEL 1965).

Group analysis of genus Penicillium recorded in Table (3) shows that isolates were belonged to 4 species of Penicillium including: P. verrucosum var. cyclopium, P. chrysogenum, P. candidus and P. frequentans with an incidence percentage of 35%, 20%, 7.5% and 2.5% respectively.

Although the contents of newly laid egg from healthy fowls are usually sterile, yet the shell soon becomes contaminated from different sources by various types of microorganisms including molds, which can grow and penetrate through egg shell contaminating the egg contents. The rate of penetration depends mainly on both humidity and storage temperature at which eggs are produced and stored. From economic point of view, penetration of molds to egg interior lead to economic losses through spoilage of eggs on the market (SHARP and STEWART, 1936; HAINES and MORAN, 1946 and ROMANOFF and ROMANOFF, 1949).

Owing to the continuous consumers demand for fresh eggs, it is extremely necessary not only to increase egg production, but also to guard against their infection through application of farm hygiene and better handling and storage methods.

REFERENCES


James, H. (1978): Modern food microbiology 2nd Ltd. Published by Van Nostrand Company.


Table 1

<table>
<thead>
<tr>
<th>Fault</th>
<th>Frequency</th>
<th>%</th>
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<tr>
<td>No. of samples</td>
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<tr>
<td>Faulty egg shell</td>
<td>40</td>
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<tr>
<td>Sided yolk</td>
<td>36</td>
<td>95.00</td>
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<tr>
<td>Aged egg (large air cell)</td>
<td>38</td>
<td>95.00</td>
</tr>
<tr>
<td>Pin spot (mold growth)</td>
<td>25</td>
<td>62.50</td>
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<tr>
<td>Cracked egg shell</td>
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<td>7.50</td>
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<td>Leakered egg shell</td>
<td>2</td>
<td>5.00</td>
</tr>
<tr>
<td>Retting</td>
<td>2</td>
<td>5.00</td>
</tr>
<tr>
<td>Spready yolk</td>
<td>2</td>
<td>5.00</td>
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Table (2)
Frequency distribution of isolated molds

<table>
<thead>
<tr>
<th>Isolates</th>
<th>Frequency</th>
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<tr>
<td>Penicillium spp.</td>
<td>62</td>
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<tr>
<td>Aspergillus spp.</td>
<td>15</td>
<td>37.50</td>
</tr>
<tr>
<td>Mucor spp.</td>
<td>4</td>
<td>10.00</td>
</tr>
<tr>
<td>Cladosporium spp.</td>
<td>3</td>
<td>7.50</td>
</tr>
<tr>
<td>Penicillium spp.</td>
<td>3</td>
<td>7.50</td>
</tr>
<tr>
<td>Alternaria spp.</td>
<td>1</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Table (3)
Percentage distribution of Aspergillus and Penicillium species from deteriorated hen's egg

<table>
<thead>
<tr>
<th>Mold species</th>
<th>Frequency</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>A. flavus Link</td>
<td>7</td>
<td>17.50</td>
</tr>
<tr>
<td>A. amstelodani (Margen) Thom &amp; Church.</td>
<td>3</td>
<td>7.50</td>
</tr>
<tr>
<td>A. fumigatus Fresenius</td>
<td>2</td>
<td>5.00</td>
</tr>
<tr>
<td>A. niger Y. Tieghem</td>
<td>2</td>
<td>5.00</td>
</tr>
<tr>
<td>A. clavatus Desm.</td>
<td>1</td>
<td>2.50</td>
</tr>
<tr>
<td>A. nidulans Link</td>
<td>1</td>
<td>2.50</td>
</tr>
<tr>
<td>P. verr. var. cyclopium (Westling) Samson, Stolk &amp; Hadlak</td>
<td>14</td>
<td>35.00</td>
</tr>
<tr>
<td>P. chrysogenum Thom</td>
<td>8</td>
<td>20.00</td>
</tr>
<tr>
<td>P. Candidus Link</td>
<td>3</td>
<td>7.50</td>
</tr>
<tr>
<td>P. frequentans Westling</td>
<td>1</td>
<td>2.50</td>
</tr>
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