الفحص البكتريولوجي للأسماك المنقطعة في سوق الزفاف - جامعة القاهرة

الرئيس: د. محمد ناصر

الفحص البكتريولوجي للأسماك المنقطعة بالسوق
محافظة الشرقية

علي مرشد، محمد صديق، محمد زيدان

أجري الفحص على 500 سمكة من أسماك الدهلي وكتل السمك المنقطعة في سوق الأسماك بمحافظة الشرقية. تم جمع 栄كبات البكتيريا والبلاكوليفير وكذلك البكتيريا والبلاكوليفير والبلاكوليفير من البكتيريا الخاصة بالأسماك والحيوانات. وقد تكون البكتيريا والبلاكوليفير والبلاكوليفير هي السبب في الاحتباس اللازم على سطح بعض الأسماك.

وэтому البطار والبلاكوليفير في نسب المنتجات السامة بفضلة السمك أكثر من الدهلي، وهذه نسب سهّل مع البكتيريا المسببة الجراهم ضرابة الأسماك السامة.

ويتضح أن الاتجاهين للبكتيريا هو 0.3 × 10⁶ × 10⁶ في غذاء السمك الدهلي وكتل السمك على الشواحي.

وإذاً، يمكن أن يكون الحيوان والبلاكوليفير. وقد أثبتت الدراسة مدى تناول هذه الأسماك للكلية، بينما البكتيريا السامة، وكذلك التي تسبب ضرابة الأسماك.
BACTERIOLOGICAL EVALUATION OF SALTED FISHES
MARKETED IN SHARKIA PROVINCE

(With 2 Tables)

By

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(Received at 15/2/1981)

SUMMARY

50 Fishes each of Mugil cephalus and Hydrocyon forskallii were subjected to bacteriological examination.
Isolation of Enterobacteriaceae organisms, halophiles, yeast and mould count were determined.
Micrococci, gram-ve bacilli, serratia, enterobacter and citrobacter were isolated from muscles of M. cephalus and H. forskallii.
Many of enterobacter belonging to bacterial flora of animal and man cause food poisoning, others lead to food spoilage.
Micrococci, serratia, sarcina and halophilic bacteria may be responsible for red coloration noticed on the surface of some fishes.
Mould and yeast can grow and tolerate high percentage of salt. Their count is higher in H. forskallii than in M. cephalus. They cause, together with gram+ve bacteria, putrefaction of salt meat.

INTRODUCTION

Fish, being a perishable food is easily attacked by microorganisms and consequently a lot of it is considered as unfit for human consumption. One of the common method of preservation conducted in Egypt is salting.

Contaminated salted fish may constitute at times public health hazard. The aim of this investigation is to carry out a further work on the incidence of enterobacteriaceae, halophiles, yeast & moulds in two common species of salted fish marketed in Sharkia, namely the Mugil cephalus and Hydrocyon forskallii.

MATERIAL AND METHODES

Random samples of salted fishes, collected from different shops at Sharkia Province and evaluated microbiologically (Morshdy et al. 1980), constitute the material for this work. 50 fishes each of Mugil cephalus and Hydrocyon forskallii were examined.

Isolation of enterobacteriaceae, halophiles, yeast and mould as well as their counts were performed.

Isolation of enterobacteriaceae: loops of inoculated tetraphionate and selenite broth incubated for 24 hrs at 37°C were streaked on two plates of MacConkey and brilliant green phenol red lactose agar (Cruickshank, 1962). Inoculated plates were incubated at 37°C for 48 hrs. Suspected colonies were purified and subjected to biochemical and serological examination for further identification (Cruickshank, 1962).

Halophiles: Loops of the prepared muscle samples were spread over salt agar plates (10% sodium chloride), then incubated at room temperature for up to 2 weeks. By bacterial growth, the identification was determined according to CruickShank, (1962).

Yeast and Mould: Dilutions of muscles and brine were used for the identification of yeast and mould using Sabouraud's medium (Bally and Scott, 1974). Inoculated plates were incubated at 25°C for 5 days before being examined. The first examination of plates was done after three days incubation to determine the degree of mould growth and, if large numbers are visible, counting the colonies was done and repeated on the fifth day. The average total yeast and mould count/g sample as well as/ml brine was calculated.

RESULTS

Table (1): Shows the results of the isolated organisms.
Table (2): Summarized the results of the total and yeast count in the examined samples.

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DISCUSSION

Enterobacteriaceae:

It is evident from results given in (Table 1) that Proteus vulgaris, Proteus morganii, Proteus mirabilis, Proteus retgeri, Klebsiella aerogenes, Serratia marcescens, Enterobacter aerogenes and Citrobacter freundii were isolated from the muscles of each of Mugil cephalus and Hydrocyon forskallii, in varying percentages. The findings were in agreement with that of Dussault (1953 & 1958).

In fact some of the isolated microorganisms, namely, Citrobacter, Klebsiella, Proteus and Enterobacter belong to the normal flora of animal and man and many of them appear as a food contaminant. However, certain members of citrobacter, were suspected to cause enteric infection (Shönberg, 1967 and Bryan, 1969). Moreover, some species of Enterobacter aerogenes have been complicated in cases of enteritis and are considered as potential food poisoning organisms; nevertheless may lead to food spoilage.

The results recorded in (Table 1) showed that micrococci were isolated from muscles of all examined samples of both species. Gram +ve bacilli were isolated from 38 samples of Mugil cephalus and from 43 samples of Hydrocyon forskallii constituting an incidence of 76% and 86% respectively. Both results agree with the findings of Dussault (1935) and Sedik (1971). These organisms exhibit a high a salt tolerance (Ellis, 1968).

The red colour noticed in the previous investigation (Morsidy, 1980) among some fishes may be explained on the fact that Micrococci induce acid proteolysis while some others are pigmented and lead to discolouration of the surface of the food on which they grow. In this respect, Tarr (1954) mentioned that the red discolouration of salted fish is caused by development of salt members of the Serratia and Sarcina genera. Shewan (1971) offered another explanation, that salted fish undergoes a type of spoilage known as pink which is due to a group of halophilic bacteria, rods, cocci and some yeasts.

Mould and Yeast:

The results pointed out that the average total mould and yeast count (Table 11) in Mugil cephalus muscles was (2.55x10³/g). Slightly higher count was noticed in H. forskallii (4.86x10³/g). In the brine the respective average counts were 5.08x10³/ml and 5.14x10³/ml.

These results agree with the findings of Tanner (1946). It seemed that yeast and mould can grow and tolerate high percentage of salt and as a general behaviour, gram + ve microbes are more adapted to the development at high osmotic pressure. The putrefaction of the salt meat result from the development of gram + ve bacteria, yeasts and moulds.

REFERENCES


Schönberg, F. (1967): In meat hygiene FAO; Agricultural studies No. 34, Rome, Food and Agriculture Organization of the United Nations.


BACTERIOLOGICAL EVALUATION OF SALTED FISHES

Table 1

Incidence of isolated organisms

<table>
<thead>
<tr>
<th>M. Organism</th>
<th>Mugil cephalus</th>
<th>Hydrocyamus forskallii</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency No. of sample</td>
<td>%</td>
</tr>
<tr>
<td>Micrococi</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Gm + ve bacilli</td>
<td>38</td>
<td>76</td>
</tr>
<tr>
<td>Proteus vulgaris</td>
<td>22</td>
<td>44</td>
</tr>
<tr>
<td>Proteus morgani</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Proteus mirabilis</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Proteus rettgeri</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Klebsiella aerogenes</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Citrobacter freudenii</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Enterobacter aerogenes</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Serratia marscens</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 2

Summarized results of total mould and yeast count in examined samples

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Mugil cephalus</td>
<td>$2 \times 10^3$</td>
<td>$12 \times 10^3$</td>
</tr>
<tr>
<td>Hydrocyamus forskallii</td>
<td>$2 \times 10^3$</td>
<td>$11 \times 10^3$</td>
</tr>
</tbody>
</table>
