قسم المراقبة الصحية على الأذنية
كلية الطب البيطري - جامعة أسيوط
رئيس القسم : أ.د/ توفيق البسيوني

التقييم الميكروبولوجي للزبادي النقي في مدينة أسيوط

نجاح سعد، مصطفى خليل، أحمد عبد الحميد

تم جمع 40 عينة من الزبادي المنتج محلياً في مدينة أسيوط لفحصها الميكروبولوجيًا لمعرفة حالة الصحة لانتاجها.

دلت النتائج على أن متوسط العدد الكلي لكل من الميكروبات القولونية، الميكروبات الكروية المعوية، الميكروبات الحبة الجريدة، الخمار والخاطير هو: 5.43 x 10^9 6.35 x 10^9 1.37 x 10^8 1.88 x 10^6.4 على التوالي بالإضافة إلى عزل عدد كبير من الميكروبات المرضية التي تؤدي إلى نفاد المنتج بنسب تفاوتت.

إن وجود هذه الميكروبات بأعداد كبيرة لهو دليل على أهمية الاشتراطات الصحية الواجبة أثناء إنتاج وتصنيع هذا المنتج، لتفادي استخدام بائدي من مصدر ملوث غير معروف بجانب ما تتضمن تلك الميكروبات من خطورة على الصحة العامة.

تم مناقشة الأهمية الصحية للميكروبات المعاوزة، كما توضحت الشروط الصحية الواجب توافرها لانتاج الزبادي.
MICROBIOLOGICAL QUALITY OF YOGHURT PRODUCED IN ASSIUT CITY
(With Two Tables)

By
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(Received at 8/6/1987)

SUMMARY

Fourty random samples of yoghurt were collected from Assiut City markets and examined microbiologically to evaluate its sanitary condition.

The average counts of coliforms, enterococci, psychrotrophs, yeasts and moulds per gm. were 5.28x10^5, 3.36x10^5, 9.31x10^4 and 8.18x10^5 respectively. Furthermore, E.coli, Entero-bacter species, proteus species, Serratia species, Staph. epidermidis, Micrococi and anaerobic spore-formers could be isolated in different percentages.

The public health importance of the isolated organisms as well as recommended hygienic measures for yoghurt making were discussed.

INTRODUCTION

Yoghurt is the traditional form of sour milk of many countries. The ideas of Metchrakov about the health-giving properties of soured and fermented milks still linger. Although, yoghurt possesses a high food value, yet it may at times be a dangerous source of infection transmitting enteric fever and food poisoning outbreaks to consumers.

Sourcing can not be relied upon for controlling all pathogenic organisms, certain dangerous microorganisms could survive for days in fermented milks of quite high acidity. It has been stated that the presence of certain types of microorganisms such as coliforms and enterococci are useful index in determining the hygienic quality of the product, as well as, could be used as index of faecal contamination. Yoghurt has been evaluated microbiologically by several workers, coliforms could be isolated from yoghurt by MERGER (1961), ARNOTT, et al. (1974) and AHMED and EL-BASSIONY (1978). Moreover, E.coli were recovered from yoghurt samples examined by ABD EL-MALEK and EL-DEMERDASH (1956); EL-SADEK and MAHMOUD (1958); MOURSY (1969), TZANETAKI (1974) and AHMED and EL-BASSIONY (1978). While ARNOTT, et al. (1974) and AHMED and EL-BASSIONY (1978) could isolate enterococci and anaerobic spore-formers from yoghurt samples. Furthermore, JONDANO (1984) suggested that enterococci count is more reliable than coliforms and E.coli for the measurement of the hygienic quality of yoghurt.

On the other hand, the contamination of yoghurt by psychrotrophs has been reported by ARNOTT, et al. (1974) and ABDOL-HAKIEM (1986). The presence of such organisms could serve in predicting the life of refrigerated foods. While, presence of yeasts and moulds in

yoghurt is indicative of poor sanitary practices in preparation and packaging. Total yeast and mold counts were determined in yoghurt by ARNOTT, et al. (1974). Recently, BOEL-HAKIEM (1986) reported that most of the examined yoghurt samples (97.5%) had total yeast and mould counts within the range of $10^2-10^4$/gm.

Therefore, this work was planned to secure informations regarding the sanitary conditions as well as pathogens that may contaminate the product produced and sold in Assiut City.

**MATERIAL and METHODS**

Forty random samples of yoghurt produced in Assiut City were collected from dairy shops and street pedlers. All samples were transferred to the laboratory with a minimum of delay and were prepared for microbiological examination according to A.P.H.A. (1972).

**Coliform and psychrotrophic counts:**

Violet red bile agar and standard plate count agar were used as recommended by A.P.H.A. (1972).

**Enterococcus count:**

Enterococcus Selective Differential agar (E.S.D) was used for enterococcus count as recommended by EFTHYMIOU, et al. (1974).

**Total yeast and mould counts:**

Malt extract agar was used according to HARRIGAN & MARGARET (1976).

**Detection of anaerobic sporeformers (Stormy fermentation test):**

The technique adopted is that recommended by CRUICKSHANK, et al. (1969).

**Detection of pathogenic microorganisms:**

The procedures used for isolation and identification of pathogenic microorganisms, namely bacteria of enteric group and staphylococci were carried out according to COWAN and STEEL (1974).

**RESULTS**

The obtained results from the examined samples of yoghurt were recorded in tables 1 & 2.

**DISCUSSION**

The results obtained and recorded in table 1, show that the average counts of coliform, enterococci, psychrophiles, yeasts and moulds recovered from the examined yoghurt samples were $5.28 \times 10^2$, $3.36 \times 10^3$, $9.31 \times 10^3$, $8.18 \times 10^4$ and $8.5 \times 10^4$ respectively. The relatively high incidence of coliforms and enterococci is considered to be indicative of unsanitary processing condition. Nearly similar results were recorded by AHMED and EL-BASSIONY (1978), and higher results were reported by MERGIER (1967) and MOURSY (1969), while, lower counts were obtained by ARNOTT, et al. (1974). Also psychrotrophic bacteria were previously isolated from yoghurt by ARNOTT, et al. (1974) and ABDEL-HAKEIM (1986). The presence of psychrotrophic bacteria...
CONTAMINATION OF YOGHURT

is indicative of poor quality product, while, occurrence of yeast and mould reflect the poor sanitary practices in manufacturing or packaging.

The results obtained and recorded in Table 2, show the incidence of E.coli, Enterobacter species, Proteus species, Serratia species, Staph. epidermidis, Micrococci and Anaerobic spore-formers recovered from the examined yoghurt samples. Similar organisms could be isolated from yoghurt samples examined by MOURSY (1969), ARNOTT, et al. (1974) and AHMED and EL-BASSINY (1978). The presence of organisms in yoghurt whether pathogenic or non pathogenic may be due to the inadequate hygienic measures in production, handling, distribution and/or the use of unknown microbiological quality of yoghurt cultures.

The overall picture of yoghurt quality in Assiut as measured by microbiological evaluation appears to indicate a need for strict hygienic measures during production, handling and distribution to make good and safe product.

REFERENCES

NAGAH M. SAAD, et al.

Table (1)
Counts of microorganisms enumerated in examined yoghurt samples

<table>
<thead>
<tr>
<th>Counts</th>
<th>Test</th>
<th>No. of samples examined</th>
<th>Positive samples</th>
<th>Count/gm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Coliform</td>
<td></td>
<td>40</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>Enterococcus</td>
<td></td>
<td>40</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Psychrotrophic</td>
<td></td>
<td>40</td>
<td>34</td>
<td>85</td>
</tr>
<tr>
<td>Yeast</td>
<td></td>
<td>40</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>Mould</td>
<td></td>
<td>40</td>
<td>32</td>
<td>80</td>
</tr>
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</table>

Table (2)
Frequency distribution of isolates in yoghurt samples

<table>
<thead>
<tr>
<th>Isolate</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.coli</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Enterobacter spp.</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Serratia spp.</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>Staph. epidermidis</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Proteus spp.</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Micrococcil</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Anaerobic sporeformer</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>