قسم المراقبة الصحية على الأغذية

كلية الطب البيطري - جامعة أسيوط

رئيس القسم : أ.د/ توفيق البسيوني

الحالة الصحية للزبد الفلاحي المصنع في مدينة أسيوط

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عدد

أجريت هذه الدراسة على ٤٠ عينة من الزبد الفلاحي جمعت عشوائيا من أسواق مدينة أسيوط وذلك لتقييم حالتها الميكروبيولوجية وقد وجد أن :

متوسط العدد الكلي للميكروبات المحبة للبرودة ، الميكروبات السبحية المعوية ، متوسط العدد الكلي للخمائر والفطريات كما يلي على الترتيب :

٦٣ر١ × ١٠⁷ ، ٦٠ر٣ × ١٠⁴ ، ٣٥ر٦ × ١٠³ ، ١١ر٧ × ١٠⁴ .

بينما كان متوسط عدد الميكروب القولوني ويشمل :

Total coliforms, Faecal coliforms

كما يلي على الترتيب ٤٧ر١ × ١٠⁴ ، ٧٤ر٩ × ١٠³

كما تم عزل الميكروب العصوي القولوني من ٥٥٪ من عينات الزبد المفحوص وبينما وجد أن الميكروبات اللاهوائية تواجدت في ٥ر٧٢٪ من العينات .

وقد تم مناقشة خطورة هذه الميكروبات على الصحة العامة والشروط الواجب توافرها لمنع تلوث هذا المنتج أثناء تصنيعه أو توزيعه .

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SANITARY CONDITION OF COOKING BUTTER MANUFACTURED IN ASSIUT CITY
(With 4 Tables)

By
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SUMMARY

40 random samples of cooking butter, were collected from Assiut city markets and shopkeepers. The microbiological examination of samples reveals that the mean value of total colony, total coliforms, faecal coliforms, psychrotrophic, enterococci, and total yeast and mold counts were respectively $1.63 \times 10^7 \pm 3.6 \times 10^6$, $1.47 \times 10^4 \pm 4.76 \times 10^3$, $9.74 \times 10^3 \pm 3.38 \times 10^3$, $3.06 \times 10^4 \pm 4.6 \times 10^3$, $6.35 \times 10^3 \pm 1.69 \times 10^3$ and $7.11 \times 10^4 \pm 1.19 \times 10^4$ /ml. E.coli and anaerobes were detected in 55 and 72.5% of the examined samples respectively. The public health hazard of these microrganisms and the suggested measures recommended for improving the quality of the product were discussed.

INTRODUCTION

The hygiemic quality of milk and milk products is necessary to provide the public with a safe, wholesome and high quality products. Since cooking butter is one of the popular varieties of dairy products in Egypt, and of high nutritive value, it could if contaminated, constitutes a public health hazard, as well as, economic losses through out its deteruration.

FERA and GAVAZZENI (1962) and KHALAFALLA, et al. (1974) tested butter for total bacteria, and recorded a count more than 10^6/ml. While, BRUM (1974) detected Psychrotrophic bacteria in a level exceeds 10^5/ml. of examined butter samples. On the other hand, several works have been conducted to estimate the level of butter contamination by Coliforms, which were 1-10, 10^2-10^6 and 10^2-10^6/ml. of butter samples examined by VECCHIO and DARCA (1957), GHONEIM (1963) and BAKHEET (1979), and they found that the incidence of coliforms were respectively 17, 35 and 67% of the examined butter samples. While, EL-ESSAWY (1980) stated that coliforms were detected in 82% of the examined butter samples.

Furthermore, GHONEIM (1963) recorded the presence of enterococci and anaerobes in 80% of examined butter samples, while EL-BASSIONY (1985) reported that enterococci could be detected in 67.5% of examined butter samples. On other instances, BAKHEET (1979) and AMAN (1985) recorded a heavy contamination of cooking butter by total yeast and mold, and they obtained a mean count of 115.23×10^7 and 99×10^6/ml. respectively. In 1982, Atherton and Newlander stated that butter of good quality must not contain total yeast and mold count more than 50/ml., while fair, poor and very poor quality butter usually contain yeast and mold count in the range of 51-100, 101-500 and 500/ml. respectively.

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Therefore, this work was planned to secure the sanitary condition of cooking butter manufactured in Assiut city and currently available at retail level.

MATERIAL and METHODS

A total of 40 random samples of cooking butter were collected from Assiut city markets and different shopkeepers, in clean, dry and sterile containers. The collected samples were dispatched to the laboratory with a minimum of delay. Preparation of samples for microbiological examination were carried out according to A.P.H.A. (1978). The prepared samples were subjected for the following examinations:

1- Total colony count.   A.P.H.A.
2- Total coliforms and faecal coliforms count according to MERCURI and COX (1979).
3- Identification of E.coli was performed according to FINEGOLD and MARTIN (1982).
4- Psychrotrophic count.   A.P.H.A. (1978).
5- Estimation of enterococci was carried out according to ISHENBERG, et al. (1970).
6- Detection of anaerobes.   (CRUICKSHANK, et al. (1969).
7- Total yeast and mold count according to HARRIGAN and MAGERET (1976).

RESULTS

The obtained results were recorded in Tables 1, 2, 3 and 4.

DISCUSSION

The results presented in tables 1 & 2 show that the mean count of total bacteria, psychrotrophs and total yeast and mold were $1.63 \times 10^7 \pm 3.6 \times 10^6$, $3.06 \times 10^4 \pm 4.6 \times 10^3$ and $7.11 \times 10^4 \pm 1.19 \times 10^4$/ml. of the examined cooking butter samples respectively. It is evident that 75, 92.5 and 97.5 of the examined samples had a count within the range of 10^5-10^6 for total bacteria, 10^3-10^4 for psychrotrophs and 10^2-10^3/ml. for total yeat and mold. Higher results were obtained by several invisigations conducted by FERA and GAVAZZENI (1962), BRUM, (1974), HUSEIN. (1975), BAKHEET, (1979) and AMAN (1985). The presence fo psychrotrphs in butter may be responsible for development of objectionable taints that render the product unremarketable, leading to economic losses (FOSTER, et al. 1957). Regarding the total yeast and mold count. and according to the standard stated by ATHERTON and NEWLANDER (1982), it is evident that 97.5% of the examined cooking butter samples are of very poor quality. Furthermore, it has been found that various species of yeast and mold may induce serious defects in butter, also some strains of molds are capable of forming toxins and constitute a public health hazard (MOSSEL, 1975; BULLERMAN, 1976 and JAY, 1978).

Cliforms. faecal coliforms and enterococci were detected in 77.5, 65.0 and 72.5% of the examined butter samples, with a mean count of $1.47 \times 10^4 \pm 4.76 \times 10^3$, $9.74 \times 10^3 \pm 3.38 \times 10^3$ and $6.35 \times 10^3 \pm 1.69 \times 10^3$/ml. respectively (table 2). Most of the examined samples (74.2, 73.07 and 84.65%) had a count within the range of 10^1-10^2/ml. (table 4). GHONEIM (1963) reported similar results, while higher counts of coliforms and enterococci were recorded by VECCHIO and DARCA (1957), EL-ESSAWY (1980) and EL-BASSIONY (1985). On the other hand, E.coli and anaerobes were recovered from 55 and 72.5% of the examined butter samples, respectively

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(table 3). EL-BASSIONY (1980) obtained lower results, while higher incidence of anaerobes was recorded by GHONEIM (1963), who stated that 80% of examined butter samples were contaminated by clostridia. The epidemiology of isolated strains (E.coli, enterococci and anaerobes) has been stated by THOMASON (1956), THOMASON, et al. (1961) and LOWENSTINE (1972).

In conclusion, most of cooking butter subjected for such investigation are produced and handled under neglected sanitary measures. Strict hygienic measures should be followed during manufacture and handling of the product.

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Table (1)
Statistical analytical results of total colony, psychrotrophic
and total yeast and mold counts/ml.
of the examined cooking butter samples.

	Min.	Max.	Mean	S.E $\pm$
Total colony	1.7×10^5	9.2×10^7	1.63×10^7	3.63×10^6
Psychrotrophs	1.5×10^3	1.38×10^5	3.06×10^4	4.6×10^3
Yeast and Mold	5×10^2	2.68×10^5	7.11×10^4	1.19×10^4

Table (2)
Statistical analytical results of coliforms, faecal coliforms
and enterococci counts/ml. of the examined cooking butter samples

	Positive samples No/40	%	Min.	Max.	Mean	S.E $\pm$
Total coliforms	31	77.5	2×10^1	1.4×10^5	1.47×10^4	4.76×10^3
Faecal coliforms	26	65.0	4×10^1	1.1×10^5	9.74×10^3	3.38×10^3
Enterococci	29	72.5	5×10^1	5.7×10^4	6.35×10^3	1.69×10^3

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Table (3)
Incidence of E.coli and anaerobes
in the examined cooking butter samples

Isolates	Positive samples No/40	%
E.coli	22	55
Anaerobes	29	72.5

Table (4)
The frequency distribution of bacteriological counts/ml. of the examined cooking butter samples

Total colony count Interval	%	Psychrotrophs Interval	%	Total coliforms Interval	%	Faecal coliforms Interval	%	Entercocci Interval	%	Total yeast and mold Interval	%
10^5-10^6	75	10^3-10^4	92.5	10^1-10^2	74.2	10^1-10^2	73.07	10^1-10^2	84.65	10^2-10^3	97.5