

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

الحالة الصحية للجبن القريش المصنع محليا في مدينة أسيوط

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يعتبر الجبن القريش من منتجات الالبان الواسعة الانتشار في مصر الا انها عرضة  
للتلوث بمختلف الميكروبات معرضة صحة المستهلك للخطر وكذلك غالبا ما يتعرض المنتج  
للتلف مسبا خساره اقتصادية .

لذلك أجريت هذه الدراسة على ٤٠ عينة من الجبن القريش المباع في أسواق أسيوط  
لتقييم حالته الميكروبيولوجية وقد وجد أن متوسط العدد الكلي للميكروبات ، الميكروبات  
القولونية Faecal coliforms ، الميكروبات المحبة للبرودة ، الميكروبات السبحية  
المعوية ، العدد الكلي للخمائر والفطريات كما يلي على التوالي :  $26 \times 10^7 \pm$  ،  $263 \times 10^4 \pm$  ،  $185 \times 10^4 \pm$  ،  $7 \times 10^7 \pm$  ،  $63 \times 10^4 \pm$  ،  $78 \times 10^3 \pm$  ،  $95 \times 10^4 \pm$  ،  $704 \times 10^4$  / جرام .  
كما تم عزل الميكروب العصوي القولوني من ٧٥% من عينات الجبن القريش المفحوص بينما  
وجد أن الميكروبات اللاهوائية تواجدت في ٧٧ من العينات المفحوصة .

ولقد تم مناقشة خطورة هذه الميكروبات على الصحة العامة وكذلك الشروط الصحية  
الواجب اتخاذها لتحسين هذا المنتج .

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**SANITARY CONDITION OF KAREISH CHEESE MANUFACTURED  
IN ASSIUT CITY**  
(With 4 Tables)

By  
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**SUMMARY**

A sum of random samples of kareish cheese were collected from Assiut city markets. Every sample was examined microbiologically to determined its sanitary condition. The mean value of total colony count, total coliforms, faecal coliforms, psychrotrophs, enterococci and yeast and mold counts were found to be  $2.56 \times 10^7 + 4.26 \times 10^6$ ,  $2.63 \times 10^4 + 9.57 \times 10^3$ ,  $1.85 \times 10^4 + 6.40 \times 10^3$ ,  $1.07 \times 10^4 + 2.76 \times 10^4$ ,  $6.95 \times 10^3 + 1.78 \times 10^3$  and  $2.3 \times 10^5 + 7.04 \times 10^4$  /g., respectively. E.coli and anaerobes were detected in 75 and 77.5% of the examined kareish cheese samples, respectively. The public health importance of these microorganisms, as well as, the suggested measures for improving the quality of such product were discussed.

**INTRODUCTION**

Kareish cheese is an excellent source of protein, calcium, phosphorus and many micronutrients. However, because of bad sanitation during processing, handling and distribution, it may be subjected to contamination with several types of microorganisms from different sources, that impair its utility and usually render the product unsafe, as well as, unsuitable for consumption.

Kareish cheese has been evaluated for total bacterial and coliforms count by MOURSY and NASR (1964), ABDEL-RAHMAN (1972), ABO-DONIA, *et al.* (1975), EL-BASSIONY (1975) and SHELAIH (1979). Moreover, Faecal coliforms were detected in 75% of kareish cheese samples examined by ABDEL-RAHMAN (1972), while EL-BASSIONY (1975) and SHELAIH (1979) reported that E.coli were existed in 28 and 24.29% of the examined kareish cheese samples respectively. The public health hazard of E.coli has been stated before by ROGERS and KOEGLER (1961), TULLOCH, *et al.* (1973) and FANTASIA, *et al.* (1975). On the other hand, psychrotrophic bacteria were existed in kareish cheese with a count of  $4.4 \times 10^6$  /g. as recorded by SAAD (1983), while AHMED (1977) and SHELAIH (1979) reported that enterococci could be detected in kareish cheese in variable counts. Furthermore, anaerobic bacteria could be detected in 60% of kareish cheese examined by HELMY (1960), ABDEL-RAHMAN (1972) and EL-BASSIONY (1975).

On other instances, total yeast and mold could be enumerated by ABDEL-RAHMAN (1972), ABO-DONIA, *et al.* (1975) and EL-BASSIONY (1975). Moreover, it has been recognized that total yeast and mold count could be used as indicator for proper sanitation and quality of the product (FOSTER, *et al.* 1957).



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Therefore the main object of this study is to evaluate the hygienic quality of kareish cheese currently available in Assiut city markets.

### MATERIAL and METHODS

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

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

### RESULTS

The obtained results are recorded in tables 1, 2, 3 and 4.

### DISCUSSION

It is evident from tables 1 & 4 that the mean value of total bacteria, psychrotrophic and total yeast and mold counts were respectively,  $2.56 \times 10^7 \pm 4.26 \times 10^6$ ,  $1.07 \times 10^5 \pm 2.76 \times 10^4$  and  $2.3 \times 10^7 \pm 7.04 \times 10^4$  /g. of examined kareish cheese samples. The highest frequency distribution of psychrotrophs and total yeast and mold was respectively 82.5 and 97.5% of the examined samples and lies within the range of  $10^3$ - $10^4$ , while 85% of the samples had a count of  $10^6$ - $10^7$  total bacteria/g. These findings are lower than those obtained by MOURSY and NASR (1964), ABDEL-RAHMAN (1972), EL-BASSIONY (1975), SHELAIH (1979) and SAAD (1983), while lower results were reported by ABO-DONIA, et al. (1975).

Coliforms, faecal coliforms and enterococci were detected respectively in 87, 85 and 90% of the examined kareish cheese samples, with a mean value of  $2.63 \times 10^4 \pm 9.57 \times 10^2$ ,  $1.85 \times 10^4 \pm 6.4 \times 10^3$  and  $6.95 \times 10^3 \pm 1.78 \times 10^2$  /g. respectively (Table 2). Most of the examined samples had coliforms ranged from  $10^2$ - $10^3$  /g. (Table 4). Higher results were obtained by MOURSY and NASR (1964), EL-BASSIONY (1975) and SHELAIH (1979), while GADEL-RAB (1983) recorded lower values of faecal coliforms. On the other hand, the results in (Table 3) show that E.coli and anaerobes were recovered from 75 and 77.5% of the examined kareish cheese samples respectively. Lower incidence of E.coli was reported by EL-BASSIONY (1975) and SHELAIH (1979), while anaerobes were previously detected in kareish cheese in lower percentages by HELMY (1960), ABDEL-RAHMAN (1972) and EL-BASSIONY (1975).

The presence of anaerobes and E.coli in relatively high percentage may constitute a public health hazard (LOWENSTINE, 1972). Furthermore, enterococci and E.coli are regarded



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as indicative of faecal pollution, while enterococci were reported as a cause of gastroenteritis and were associated with outbreaks of food poisoning (THOMASON, 1956).

In conclusion, the results of this study point out the neglected sanitary control adopted during manufacture, handling and distribution of kareish cheese. Therefore, it is advisable to obligate strict hygienic measures during preparation and handling of such product to improve its quality, as well as, to safeguard consumers against infection.

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Table (1)

Statistical analytical results of total colony, psychrotrophic and yeast and mold count/g. of examined kareish cheese samples

	Min.	Max.	Mean	S.E. ±
Total colony count	$1 \times 10^6$	$9.6 \times 10^7$	$2.56 \times 10^7$	$4.26 \times 10^6$
Psychrotrophs	$1.01 \times 10^3$	$9 \times 10^5$	$1.07 \times 10^5$	$2.76 \times 10^4$
Yeast and mold	$1 \times 10^3$	$2.3 \times 10^6$	$2.3 \times 10^5$	$7.04 \times 10^4$

Table (2)

Statistical analytical results of total coliforms, faecal coliforms and enterococci counts/g. of examined kareish cheese samples

	Positive samples		Counts/g.			S.E. ±
	No/40	%	Min.	Max.	Mean	
Total coliforms	35	87	$9 \times 10^1$	$4.2 \times 10^5$	$2.63 \times 10^4$	$9.57 \times 10^3$
Faecal coliforms	34	85	$6 \times 10^1$	$2.3 \times 10^5$	$1.85 \times 10^4$	$6.4 \times 10^3$
Enterococci	36	90	$1 \times 10^1$	$3.2 \times 10^4$	$6.95 \times 10^3$	$1.78 \times 10^3$

Table (3)

Incidence of *E. coli* and anaerobes in the examined kareish cheese samples

Isolates	Positive samples	
	No/40	%
<i>E. coli</i>	30	75
Anaerobes	31	77.5

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Table (4)  
The highest frequency distribution of bacteriological counts/g.  
in the examined kareish cheese samples

Total colony count Interval	Psychrotrophs Interval	Psychrotrophs %	Total coliforms Interval	Total coliforms %	Faecal coliforms Interval	Faecal coliforms %	Enterococci Interval	Enterococci %	Yeast and mold Interval	Yeast and mold %
$10^6 - 10^7$	$10^3 - 10^4$	82.5	$10^2 - 10^3$	77.14	$10^1 - 10^2$	73.53	$10^1 - 10^2$	86.11	$10^3 - 10^4$	97.5