قسم : المراقبة الصحية على الأغذية .
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مدى تواجد البكتريا المعوية في منتجات الألبان بمدينة سوهاج

فوزى أبو الخير ، توفيق البسيوني ، حسن جاد الرب

تم فحص عدد ٧٢ عينة من منتجات الألبان المختلفة والمتداوله بمدينة سوهاج وتشمل ٢١ عينة جبن قريش ، ٢١ عينة لبن زبادى ، ٣٠ عينة مثلج لبني (آيس كريم) وذلك لمعرفة مدى تواجد الميكروبات المعوية بهذه المنتجات . ولقد أوضح البحث أن متوسط العدد الكلي للبكتريا المعوية في الجرام الواحد هو ١ر٢٠١ ، ٣ر٢٢ ، ١ر٤٧ × ١٠^٦ لكل من الجبن القريش والزبادى والآيس كريم على التوالي . وقد أمكن عزل الميكروبات التالية :

Serrati, Providencia, Proteus mirailis, Proteus rettgerll, Citrobacter, Klebsiella, Enterobacter, E. coli.

من العينات سالفة الذكر بنسب متفاوته ولم يتم عزل ميكروب Shigella, Salmonella

ويعزو الباحثين زيادة عدد الميكروبات المعوية الكلية والميكروبات المختلفة سالفة الذكر الى عدم تطبيق القواعد الصحيه السليمه في تصنيع وانتاج وتداول هذه المنتجات .

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ENTEROBACTERIACEAE IN SOME MILK PRODUCTS IN SOHAG CITY

(With 3 Tables)

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SUMMARY

A total of 72 samples of milk products (including 21 kareish cheese, 21 yoghurt and 30 ice-cream samples) were collected from Sohag City markets for enumeration and isolation of Enterobacteriaceae organisms. the results obtained revealed that the mean count of Enterobacteriaceae organisms were 1.01×10^6, 3.22×10^6 and 1.47×10^6 /g., respectively for cheese, yoghurt and ice-cream samples.

E.coli, Enterobacter, Klebsiella, Citrobacter, Proteus rettgerii, P.mirabilis, Providencia and Serratia spps. were isolated in different percentages from examined samples. Salmonellae and Shigellae organisms could not be detected. Suggested measures for improving the quality of the products are discussed.

INTRODUCTION

Milk products may be subjected to contamination during processing, handling and distribution with several microorganisms including Enterobacteriaceae. The contamination of milk-products may impair the product utility and usually render them unfit for human consumption from the sanitary point of view.

The presence of Enterobacteriaceae organisms in dairy products is considered objectionable not only, as they may induce certain undesirable changes which render the product of inferior quality, unmarketable, or even unfit for human consumption. Moreover, their presence is frequently considered as a reliable index of faecal contamination (THATCHER and CLARK 1968).

The public health significance should not be overlooked, as they have been implicated in many cases of food poisoning (PERISIC and JANKOVIC 1967, MARTH 1969, IORDANOV et al, 1970, MATSIEVSKUI et al, 1971; TULLOCH et al, 1973 SMALL and SHARP, 1979) and many other food borne diseases.

As the importance of Enterobacteriaceae organisms in dairying is due to the fact that their presence in milk and its products is frequently considered as an indicator of faculty methods of production, handling and procesing. therefore, this work was planned to assess the enumeration and identification of members of Enterobacteriaceae in some milk products marketed in Sohag City.

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MATERIAL and METHODS

A total of 72 random samples of milk products, including kareish cheese 21 samples, yoghurt (Zabadu) 21 samples and ice-cream 30 samples, were collected from Sohag City markets. The samples were dispatched to the laboratory with a minimum of delay. Handling and preparation of the products were done according to A.P.H.A. (1978). Enterobacteriaceae count was done on violet red bile glucose agar (V.R.B.G.A) according to MERCURI and COX, (1979).

Isolation and identification of Enterobacteriaceae organisms were done according to EDWARDand EWING (1972), FINEGOLD and MARTIN (1982).

RESULTS

The obtained results recorded in table 1, 2 and 3.

DISCUSSION

The results given in table (1) show the total Enterobacteriaceae count in the examined samples of dairy products. It was evident that 85.7% of Kareish cheese samples proved to be contaminated with Enterobacteriaceae. The maximum count was 1.06×10^{7}, the minmum was 20 and the mean was 1.01×10^{6} /g. the highest frequency distribution (49.99 %) lies within the range of 10 - 10 (table 2).

90.48% of yoghurt samples were also contaminated, the maximum count was 3.53×10^{7} and the minimum was 10 with a mean value of 3.22×10^{6} /g. The highest frequency distribution (36.84%) lies wihin the range of 1 - 10 (table 2). The result also reveal that 76.67% of ice-cream samples were contaminated with Enterobacteriaceae organisms within the range of $3.4^{7} \times 10$ as a maximum and 20 as a minimum and 1.47×10^{6} /g as a mean. The highest frequency distribution (56.52%) lies within the range of 10 - 10 (Table 2). The high count met within examined samples may be attributed to heavy contamination of these products from different sources. Moreover, the prevaling climatic conditions in Upper Egypt in summer months as well as lack other facilities which encoureged the growth and multiplication of existing organisms.

From the results recorded in table (3) it is evident that E.coli, Enterobacter, Klebsiella, Citrobacter, Providencia and Serratia species could be isolated from examined samples of Kareish cheese at varing percentages (4.76% - 80.95%). Similar organisms could be isolated from cheese by MOURSY and NASR (1964), EL-BASSIONY (1977) and SHOLAIH (1979).

Concerning yoghurt samples E.coli could be isolated from 47.6% of the examined samples, Enterobacter spp. from 19.04%, Klebsiella spp. from 9.52% and each of Citrobacter, Proteus rettgerii, P.mirabilis and Providencia spp. were isolated from 4.76% of the samples. Similar species were isolated by AL-ASHMAWY (1970),AL-ASHMAWY et al. (1977) and SAUDI (1980).

The incidence of Enterobacteriaceae organisms in examined samples of ice-cream (Table 3) was as follows E.coli (50%), Enterobacter spp. (73.33%), Klebsiella spp. (59.9%), Proteus rettgerii (16%), providencia spp. (53.33%) and Serratia spp. (3.3%). Simillar species were isolated by HAFEZ (1979), MOHAMED and AL-ASHMAWY (1980). Salmonellae and shigellae failed detection in all examined samples. The heavy contamination whether pathogenic or deteriorating organisms, find opportiunities to thirive in the products constituting a public health hazard.

In conclusion the results obtained allow to conclude that milk products in Sohag city do not satisfy the consumer's demand. The sanitary measures adopted during processing, handling and distribution of the examined dairy products are neglected in most cases as Enterobacteriaceae existed in the majority of the examined samples.

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TABLE (1):

Total Enterobacteriaceae count/g in the examined samples of milk products.

Products	No.of examined samples	No.of +ve samples No.	%	Min.	Max.	Mean	SE±
Cheese	21	18	85.70	20	1.6×10^7	1.01×10^6	58.1×10^4
Yoghurt	21	19	90.48	10	3.53×10^7	3.22×10^6	19.8×10^5
Ice-cream	30	23	76.67	20	3.40×10^7	1.47×10^6	11.5×10^5

TABLE (2)

Frequency distribution of examined samples of milk products based on their total Enterobacteriaceae count.

Products	Frequency					
	Cheese		Yoghurt		Ice-cream	
Interval	No.of samples	%	No.of samples	%	No.of samples	%
$1-10^2$	3	16.66	7	36.84	1	4.34
10^2-10^4	3	16.66	4	21.05	13	56.52
10^4-10^6	9	49.89	4	21.05	6	26.08
10^6-10^8	3	16.66	4	21.05	3	13.04
Total	18	100	19	100	23	100

TABLE (3)

Incidence of Enterobacteriaceae organisms in the examined samples of milk products.

Isolated organisms	Cheese		Yoghurt		Ice-cream	
	No.of +ve samples	%	No.of +ve samples	%	No.of +ve samples	%
E. coli	17	80.95	10	47.6	15	50
Enterobacter spp.	3	14.28	4	19.04	22	73.33
Klebsiella spp.	3	14.28	2	9.52	18	59.9
Citrobacter spp.	1	4.76	1	4.76	-	-
Proteus rettgerri	-	-	1	4.76	3	16
P. mirabilis	-	-	1	4.76	-	-
Providencia spp.	1	4.76	1	4.76	16	53.33
Serratia spp.	2	9.9.52	-	-	1	3.30