

قسم : المراقبة الصحية على الأغذية .
كلية : الطب البيطرى - جامعة أسيوط .
رئيس القسم : أ. د / علي يوسف لطفي .

مدى تواجد الميكروبات العنصوية القولونية في اللبن الخام بمحافظة سوهاج

فوزى أبو الخير ، توفيق البسيوني ، حسن جاد الرب

تم جمع ٤ عينة لبن طازج من أسواق مدينة سوهاج لعزل وعد الميكروبات العنصوية القولونية . وقد أظهرت النتائج أن متوسط العدد الكلي لهذه المجموعة من الميكروبات في عينات اللبن المأخوذة من الباعة المتجولين ومحلات بيع اللبن ٢٩ × ٦٠ ، ٦ × ٥١ على التوالي ، بينما كان متوسط عدد في العينات السابقة هو ٣٤ × ٤١ ، ٤ × ٢١٠ على التوالي .

تم عزل الميكروبات التالية وهي :

E.coli, *Enterobacter spp.*, *Klebsiella spp.*, and *Citrobacter spp.*

بنسب مختلفة .

خلصت الدراسة على تواجد تلك الميكروبات بأعداد كبيرة في اللبن كدليل على الإهمال في الاشتراطات الصحية السليمة الواجب اتخاذها أثناء وتوزيع اللبن .

بسم الله الرحمن الرحيم
الحمد لله رب العالمين
والصلاة والسلام على سيدنا محمد وآله

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**INCIDENCE OF COLIFORM ORGANISMS
IN RAW MILK IN SOHAG CITY**
(With 3 Tables)

By
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SUMMARY

A total of 40 raw milk samples (20 each from street venders and dairy shops) were collected from Sohag City markets for enumeration and isolation of total and faecal coliform organisms.

The results obtained revealed that the mean total and faecal coliform count/ml in examined samples of raw milk collected from street venders and dairy shops were 1.29×10^6 , 3.4×10^6 , 6.0×10^5 and 2.4×10^4 , respectively.

E. coli, *Enterobacter*, *Klebsiella* and *Citrobacter* spp. could be isolated from the examined samples of raw milk in varying percentages. The results achieved in this study proved that raw milk in Sohag City has been produced and handled under neglected hygienic measures.

INTRODUCTION

One of the most important factors particularly when the purpose of the examination is to estimate the degree of faecal contamination in raw foods is the relation of numbers of faecal coliform to the total coliform count. The importance of coliform organisms in milk and its products have probably received more attention than most other groups of bacteria (DUCOTE *et al.* 1979, PANDEY and MANDAL; 1980, ALEKSIEVA and KRUSHOV 1981, DESAL and NATARJAN 1981, PECHOVA and LUKOSOVE 1981), moreover from the public health point of view enteropathogenic serotypes of *E. coli* has been implicated in human cases of gastroenteritis, epidemic diarrhea in infants, summer diarrhea in childrens as well as many cases of food poisoning (ROGERS and KOEGLER 1961, TULLOCH *et al.* 1973 and FANTASIA *et al.* 1975).

As coliform count are useful as an index of raw milk quality, therefore the present work was planned to investigate the incidence of coliform organisms in milk in Sohag City.

MATERIAL and METHODS

A total of 40 random samples of raw milk marketed in Sohag City (20 each from street venders and dairy shops), were collected in clean, dry, sterile and stoppered bottles. The samples were dispatched to the laboratory with a minimum of delay. For bacteriological

examination, handling and preparation of the serial dilutions as well as enumeration of total coliform were conducted according to the technique recommended by A.P.H.A. (1978).

Estimation of faecal coliform count done according to EDMUNDM and THOMAS (1979). Identification of the isolated organisms were done according to its morphological characters and biochemical reactions. FINEGOLD and MARTIN (1982).

RESULTS

The obtained results are represented in table 1, 2 & 3.

DISCUSSION

It was evident from the results recorded in table (1) that all examined milk samples from street venders proved to be contaminated with coliform organisms. The maximum count/ml was 1.90×10^7 , the minimum was 20, with a mean value of $1.29 \times 10^6 \pm 0.544 \times 10^6$. The highest frequency distribution (55%) lies within the range $10^6 - 10^8$, while in samples collected from dairy shops, the maximum count/ml was 1.11×10^7 , the minimum was 80/ml with a mean value of $6.0 \times 10^5 \pm 5.5 \times 10^5$. The highest frequency distribution lies within the range $10^2 - 10^4$ (Table 2).

Concerning faecal coliform count in milk samples collected from street venders. It is evident that 90% of the examined samples were proved to be contaminated with faecal coliforms (Table 1) with a count of 1.27×10^5 /ml as a maximum, 10/ml as a minimum with a mean value of $3.4 \times 10^4 \pm 0.973 \times 10^4$. The highest frequency distribution (61.11%) lies within the range $10^4 - 10^6$, while the maximum coliform count/ml of milk samples collected from dairy shops was 2.1×10^5 , the minimum was 20 with a mean value of $2.4 \times 10^4 \pm 1.31 \times 10^4$. The highest frequency distribution lies within the range $10^2 - 10^6$ (Table 2).

The presence of high numbers of coliform and faecal coliform organisms in raw milk samples indicates that such milk is produced under neglected sanitary measures. The comparatively lower counts recorded by GHOZVINIAN *et al.* (1972). MISHRA *et al.* (1978) and DUCOTA *et al.* (1979), may be attributed to the advanced hygienic measures adopted during production and handling of milk in different localities. Higher counts were also reported by ANON (1970), KALYANOV and GOGOV (1977).

From the results recorded in table (3) it is evident that 78 (60.93%) out of 128 isolated strains were proved to be *E.coli*, while the other isolated strains were identified as 34 (26.56%) *Enterobacter* spp., 6 (4.70) *Klebsiella* spp. and 10 strains (7.81%) as *Citrobacter* spp. Similar species could be isolated by AL-ASHMAWY *et al.* (1977), GORG *et al.* (1977), and MISHRA *et al.* (1978). On conclusion the information given by the results reported herein pointed out that, the sanitary control adopted during production, handling and distribution of raw milk in Sohag City are neglected. Therefore strict hygienic measures and observation by specialists in dairy farms, collecting centers and dairy shops are highly recommended.

COLIFORM ORGANISMS IN MILK

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Table (1)

Statistical analytical results of total coliform, faecal coliform count/ml. in examined raw milk samples

Organisms	Source of the samples	No. of examined samples	No. of + ve samples	%	Min.	Max.	Mean	S.E.M. ±
Total coliform	S.V.	20	20	100	20	1.9×10^7	1.29×10^6	0.544×10^6
	D.S.	20	20	100	80	1.11×10^7	6.0×10^5	5.5×10^5
Faecal coliform	S.V.	20	18	90	10	1.27×10^5	3.4×10^4	0.973×10^4
	D.S.	20	16	80	20	2.1×10^5	2.4×10^4	1.31×10^4

S.V. = street vendors

D.S. = dairy shops

Coliform organisms in milk

Table (2)

Frequency distribution of examined milk samples based on their total coliform and faecal coliform counts

Interval	Frequency							
	Street Venders		Dairy shops		Street vendors		Dairy shops	
	No. of samples	%	No. of samples	%	No. of samples	%	No. of samples	%
1-10 ²	1	5	2	10	3	16.6	4	25
10 ² - 10 ⁴	5	25	9	45	4	22.2	7	43.75
10 ⁴ - 10 ⁶	3	15	8	40	11	61.11	5	31.25
10 ⁶ - 10 ⁸	11	55	1	5	-	-	-	-
Total	20		20		18		16	

Table (3)

Distribution of coliform organisms isolated from examined samples of raw milk

Isolated organisms	No. of isolated strains	Street vendors	Dairy shops	Total	%
		%	No. of isolated strains		
E. coli	31	48.44	47	78	60.93
Enterobacter spp.	20	31.25	14	34	26.56
Klebsiella spp.	3	4.69	3	6	4.70
Citrobacter spp.	10	15.62	-	10	7.80
Total isolates	64	100.00	64	128	100.00

Statement of Assets and Liabilities

Year 1911

The following statement of assets and liabilities is based on a full and complete audit of the books and records of the

Assets	Liabilities
Real Estate	Accounts Payable
Investments	Notes Payable
Accounts Receivable	Other Liabilities
Inventory	
Prepaid Expenses	
Other Assets	
Total Assets	Total Liabilities

Year 1912

The following statement of assets and liabilities is based on a full and complete audit of the books and records of the

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