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ASPECTS ON THE SANITARY STATUS OF RAW MILK IN KALIOBIA GOVERNORATE (With 3 Tables)

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(Received at 5/7/1988)

الحالة الصحية للبن الخام بمحافظة القليوبية

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أجريت الدراسة البكتريولوجية على مائه عينة من اللبن الخام جمعت من الباعة الجائلين ومن محلات متعددة من محافظة القليوبية لتقرير حالتها الصحية ومدى تلوثها بمختلف الميكروبات . وقد أثبتت النتائج أن العدد الكلي للميكروبات في العينات تراوح بين 10×10^4 ، 10×10^5 بمتوسط قدرة 10×10^4 سم² من اللبن. كما تواجدت ميكروبات الكوليفورم في جميع العينات التي تم فحصها. وكان متوسط العدد الاحتمالي الكلي لتلك الميكروبات هو 10×10^4 . أمكن عزل ميكروب الاشريشيا كولاي *E. coli* في 27% من العينات التي تم فحصها. كذلك امكن عزل ميكروب ستروباكتروفاي ، ستروباكتروفاي دافيرس ، ستروباكتروفاي الموناتيكس ، انتيروباكتروفاي كولاسي ، انتيروباكتروفاي ايجروجنيز ، انتيروباكتروفاي اجلوميرانز ، كليبيلا اوكسيتوكا ، كليبيلا ريفوسيكليرومانس ، كليبيلا اوزني وكليبيلا نيموني من العينات التي تم فحصها بنسب متفاوتة تراوحت بين 4% ، 25% . تبين من نتائج الفحص السيرولوجي لعترات الاشريشيا كولاي التي عزلت والتي يمكن تصنيفها أنها تنتمي الى سبعة أنواع سيرولوجية مختلفة وهي :

$O_{26}K_{60}$, $O_{111}K_{58}$, $O_{119}K_{69}$, $O_{127}K_{63}$, $O_{114}K_{90}$, $O_{126}K_{71}$, $O_{128}K_{67}$

وقد تم مناقشة أهمية الميكروبات المعزولة من الناحية الصحية .

SUMMARY

One hundred random samples of raw milk were collected from street vendores and dairy shops in different localities in Kaliobia Governorate for total colony count and coliform contents.

The obtained results revealed that the mean total colony and coliform counts were $39.46 \times 10^4 \pm 17.31 \times 10^4$ and $10.99 \times 10^4 \pm 9.34 \times 10^4$ in examined samples respectively. *E. coli* could be isolated from 27% of examined samples, while other coliforms could be detected in varying percentages ranging from 4% to 35%.

Serological typing of isolated *E. coli* revealed identification of the following serotypes: $O_{26}K_{60}$ (7 strains), $O_{111}K_{58}$ (6 strains), $O_{128}K_{67}$ (2 strains) and one strain each of $O_{119}K_{69}$, $O_{126}K_{71}$, $O_{114}K_{90}$ and $O_{127}K_{63}$.

The public health importance and economic significance of existing micro-organisms have been discussed.

S.D. MORGAN, *et al.***INTRODUCTION**

Milk as it leaves the healthy udder may be subjected to so many risks of contamination from various sources till it reaches the consumer. Contaminants may find opportunities to thrive and multiply resulting in high bacterial count.

Therefore, sooner or later, such invaders may induce objectionable changes rendering the product unmarketable or even unfit for consumption thus causing economic losses. Presence of pathogenes may induce public health problems.

Total count and incidence of coliforms are considered the yark stick among quality control tests applied on milk.

Raw milk is consumed by the natives either in the raw state or after being heated. Realizing that the community or personal hygiene is mostly lacking among producers and to judge the sanitary status of produced raw milk, this investigation has been conducted.

MATERIAL and METHODS**Collection of samples**

One hundred random samples of raw milk were collected from street vendors and dairy shops in different localities in Kaliobia Governorate. Samples proved to be heat treated were rejected.

Total colony count and coliform count (MPN/100 ml) was carried out as recommended by APHA (1978).

Isolated coliform colonies were purified and identified according to KRIEG and HOLT (1984).

Serological identification of E.coli isolates

The slide agglutination technique was adopted, using available coli antisera of Bio Mericux Laboratory reagent and products, France.

RESULTS

Results obtained are recorded in Tables (1 - 3).

Table (1)
Statistical analytical results of total colony count and coliform content (MPN) in examined samples

	Total No. of samples	Min.	Max.	Mean	S.E.M. \pm
T.C.C./ml.	100	40×10^4	125×10^{12}	39.46×10^{11}	17.31×10^{11}
Coliform count (MPN/100 ml)	100	43×10^2	94×10^{12}	10.99×10^{11}	9.34×10^{11}

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Table (2)
Incidence of isolated coliforms in examined samples

Isolates	No. of samples	%
<i>Escherichia coli</i>	27	27
<i>Citrobacter freundii</i>	35	35
<i>Cit. diversus</i>	21	21
<i>Cit. amalonaticus</i>	6	6
<i>Enterobacter cloaceae</i>	31	31
<i>Ent. aerogenes</i>	26	26
<i>Ent. agglomerans</i>	19	19
<i>Klebsiella oxytoca</i>	30	30
<i>K. rhinoscleromatis</i>	28	28
<i>K. ozaenae</i>	6	6
<i>K. pneumoniae</i>	4	4

Table (3)
Frequency distribution of *E.coli* serotypes
isolated from examined samples

Serotype	Frequency	
	No. of samples	%
O ₂₆ K ₆₀	7	7
O _{III} K ₅₈	6	6
O ₁₂₈ K ₆₇	2	2
O ₁₁₉ K ₆₉	1	1
O ₁₂₆ K ₇₁	1	1
O ₁₁₄ K ₉₀	1	1
O ₁₂₇ K ₆₃	1	1
Untypable	8	8

DISCUSSION

Results given in table (1) reveal that the maximum total colony count per ml. of examined samples was 125×10^2 , the minimum was 40×10^2 , with a mean value of $39.46 \times 10^2 \pm 17.31 \times 10^2$.

All examined samples proved to be contaminated with coliforms. The coliform count (MPN/ 100 ml) ranged from 43×10^2 as a minimum to 94×10^2 as a maximum, with a mean value of $10.99 \times 10^2 \pm 9.340 \times 10^2$ (Table 1).

E.coli could be isolated from 27% of examined samples, while *citrobacter freundii*, *cit. diversus*, *Cit. amalonaticus*, *Enterobacter cloaceae*, *Ent. aerogenes*, *Ent. agglomerans*,

Klebsiella oxytoca, *K. rhinoscleromatis*, *K. ozaenae* and *K. pneumoniae* were also isolated at varying percentages ranging from 4% to 35% of examined samples (Table 2).

Out of 27 *E. coli* strains isolated, 19 strains could be serologically typed and belonged to 7 serotypes O₂₆K₆₀ (7 strains), O₁₁₉K₆₉ (6 strains), O₁₂₆K₇₁ (2 strains), O₁₁₄K₉₀ (2 strains), O₁₂₇K₆₃ (one strain) while the remaining 8 strains could not be typed due to the lack of specific antisera required (Table 3).

The relatively high count met with in this work as well as the high coliform as compared with that reported by different authors for raw milk (SINGH and RANGANATHAN, 1978 and TSENG' 1979) show to what extent the market milk under investigation has been exposed to contamination during various stages of production and handling consequently such milk is considered of inferior quality and of impaired utility.

The public health importance of isolated coliforms as well as the different *E. coli* serotypes has been emphasized by many investigators (MARIER, et al. 1973; THEKDI & LAKHANI, 1973; MOSSEL, 1975; SHELAIH, 1976 and KORNKI & MARTH, 1982).

In conclusion, it seems necessary that concerned authorities should impose special specifications and bacteriological standards and take active part in the control of milk production and handling not only for detection of errors and defects but to insure that errors are corrected and defects are not repeated.

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