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**PREVALENCE OF E. COLI SEROTYPES  
IN RAW MILK AND SOME DAIRY PRODUCTS**  
(With Two Tables)

By

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مدى تواجد عترات الايشريشيا كولاي الممرضه في اللبن الخام  
وبعض منتجات الالبان

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تم فحص البكتريولوجي لاثنتين من عينات الالبان الخام والجبن الديمياطي والقشدة الطازجة (الكريمة) والمثلوجات اللبنية - جمعت من مصادر مختلفة من أسواق القاهرة والجيزة: وضاحتها. وقد يمكن عزل عترات الايشريشياكولاي بنسبة 32%، 15.15%، 38% و 33.33% من عينات اللبن الخام والجبن الديمياطي والقشدة والمثلوجات اللبنية على التوالي وقد تبين من نتائج التصنيف السيرولوجي لعترات الايشريشياكولاي التي عزلت من عينات الالبان ومنتجاتها انها تنتمي الى تسعة انواع سيرولوجية ممرضة:

$O_{26}: K_{60}: B_6, O_{78}: K_{80}: B, O_{124}: K_{72}: B_{17}, O_{119}: K_{64}: B_{14}, O_{126}: K_{71}: B_{16}, O_{55}: K_{59}: B_5, O_{111}: K_{58}: B_4, O_{86}: K_{61}: B_7$  and  $O_{125}: K_{70}: B_{15}$ .

هذا وقد نوقشت الأهمية الصحية والاقتصادية للميكروبات المعزولة وكذلك الاجراءات التي يمكن اتخاذها لتحسين حالة المنتج.

**SUMMARY**

Two hundred random samples, 50 each of market raw milk, fresh cream, Domiati cheese and Ice-ream collected from different localities in Cairo & Giza were examined bacteriologically for detection, isolation and identification of E.coli. Serological typing of existing E.coli were performed.

E.coli could be isolated from 32%, 15.15%, 38% and 33.33% of examined samples of raw milk, Domiati cheese, fresh cream and Ice-cream respectively.

Serological typing of E.coli strains isolated from examined samples, proved to belong to:  $O_{26}: K_{60}: B_6, O_{78}: K_{80}: B, O_{124}: K_{72}: B_{17}, O_{119}: K_{64}: B_{14}, O_{126}: K_{71}: B_{16}, O_{55}: K_{59}: B_5, O_{111}: K_{58}: B_4, O_{86}: K_{61}: B_7$  and  $O_{125}: K_{70}: B_{15}$ .

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### INTRODUCTION

Contaminated dairy products with microorganisms from a variety of sources during production & handling may, at times, constitute a public health hazard.

Coliform organisms in milk or milk products have probably received more attention than most other groups of bacteria occurring due to its wide distribution in the environment.

Much attention has been paid to enteropathogenic Escherichia coli as such strains have been implicated in several diseases among consumers (CHHABRA *et al.*, 1982).

Therefore, the present investigation deals with incidence of the different E.coli serotypes in raw milk and some dairy products.

### MATERIAL and METHODS

Two hundred random samples (Fifty each) of raw milk, fresh cream, Domiati cheese and Ice-cream collected from different localities in Cairo & Giza were bacteriologically examined for the presence of E.coli according to the technique recommended by A.P.H.A. (1985). Isolates were identified as described by KRIEG and HOLT (1984). Milk samples were subjected to Guaiac test (SCHÖNBERG, 1956), and heat treated samples were discarded.

The slide agglutination technique was adopted for serotyping of E.coli strains, using available coli antisera of Boehringerwerk AG., Marburg W. Germany.

### RESULTS

All results obtained are recorded in tables (1 & 2).

### DISCUSSION

E.coli could be detected in 32% and 38% of examined raw milk and Fresh cream samples respectively while it was present in Domiati cheese and Ice-cream in 10% and 32% respectively (Table 1).

Presence of E.coli in any food article is indicative of fecal contamination, hence the possible presence of other enteric pathogens (CHHABRA *et al.*, 1982; KREIG & HOLT, 1984 and ICMSF, 1986).

Moreover, Enteropathogenic serotypes of E.coli were incriminated in infection of the urinary tract, appendicular abscess, peritonitis, cholecystitis, pyelitis, pyelonephritis and wound infection (SINGH & RANGANATHAN, 1974; MOSSSEL, 1975; ROWI *et al.*, 1975; KRIEG & HOLT, 1984 and ICMSF, 1986).

A total of 56 strains of E.coli isolated from raw milk (16 strains), Fresh cream (19 strains), Domiati cheese (5 strains) and Ice-cream (16 strains) were serotyped

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(Table 2).

Isolated strains from raw milk proved to belong to 6 different serotypes; (6 strains) belonged to  $O_{26}:K_{60}:B_6$ , (3 strains) to  $O_{78}:K_{80}:B_7$ ; (3 strains) to  $O_{124}:K_{72}:B_{17}$ , (2 strains) to  $O_{119}:K_{69}:B_{114}$ , (one strain) to  $O_{126}:K_{71}:B_{16}$  and (one strain) to  $O_{55}:K_{59}:B_5$ . While 19 E.coli strains isolated from Fresh cream belonged to 6 different groups, (6 strains) to  $O_{26}:K_{60}:B_6$ , (4 strains) to  $O_{124}:K_{72}, K_{17}$ , (4 strains) to  $O_{78}:K_{80}:B_7$ , (3 strains) to  $O_{126}:K_{71}:B_{16}$ , (one strain) to  $O_{86}:K_{61}:B_7$  and (one strain) to  $O_{125}:K_{70}:B_{15}$ . It is evident from the results that 5 E.coli strains isolated from Domiati cheese belonging to 3 different serotypes, (3 strains) proved to belong to  $O_{26}:B_6$ , (one strain) to  $O_{111}:K_{58}:B_4$  and (one strain) to  $O_{126}:K_{71}:B_{16}$ .

Out of the 16 E.coli strains isolated from Ice-cream (6 strains) proved to belong to  $O_{26}:K_{60}:B_6$ , (5 strains) to  $O_{111}:K_{58}:B_4$ , (3 strains) to  $O_{124}:O_{72}:B_{17}$  and (one strain) to  $O_{86}:K_{61}:B_7$ , the remaining 2 strains could not be typed.

The above mentioned E.coli serotypes proved to be pathogenic to man according to CRUICKSHANK et al. (1973).

The public health importance of E.coli has been reported by many authors as enteropathogenic serotypes have been incriminated in cases of acute gastroenteritis in infants, the responsible serotypes for such syndrome are groups of  $O_{26}$ ,  $O_{119}$ ,  $O_{126}$ ,  $O_{55}$ ,  $O_{111}$ ,  $O_{125}$  and  $O_{86}$ . Other serotypes of E.coli ( $O_{124}$  and  $O_{78}$ ) were the causative agents of dysentery like diseases or cholera like diarrhoea (PYATKIN & KRIVOSHEIN, 1980 and KORNACKI & MARTH, 1982). Realizing that the different E.coli serotypes have been implicated in many diseases to man, therefore, one may safely conclude that sanitary control measures should be taken during production, handling & storage to improve the quality of the products.

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Table (1): Incidence of isolated E.coli in examined samples

Product	Total No.	Positive samples	
	of samples	No.	%
Raw milk	50	16	32
Fresh cream	50	19	38
Domiaty cheese	50	5	10
Ice-cream	50	16	32

Table (2): E.coli serotypes isolated from examined samples

Serotypes	No. of strains			
	Raw milk	Fresh cream	Domiaty cheese	Ice-cream
O <sub>26</sub> : K <sub>60</sub> : B <sub>6</sub>	6	6	3	5
O <sub>78</sub> : K <sub>80</sub> : B	3	4	-	-
O <sub>124</sub> : K <sub>72</sub> : B <sub>17</sub>	3	4	-	3
O <sub>119</sub> : K <sub>69</sub> : B <sub>14</sub>	2	-	-	-
O <sub>126</sub> : K <sub>71</sub> : B <sub>14</sub>	1	3	1	-
O <sub>55</sub> : K <sub>59</sub> : B <sub>5</sub>	1	-	-	-
O <sub>111</sub> : K <sub>58</sub> : B <sub>4</sub>	-	-	1	5
O <sub>86</sub> : K <sub>61</sub> : B <sub>7</sub>	-	1	-	1
O <sub>125</sub> : K <sub>70</sub> : B <sub>15</sub>	-	1	-	-
Untypaed	-	-	-	2
Total	16	19	5	16