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

By

A.M. AHMED and S.S. SALLAM
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SUMMARY

Two hundred random samples, 50 each of market raw milk, fresh cream, Domiati cheese and ice cream 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: 0: 26 K: 60 B: 6 0.78 K: 80 B: 0 124 K: 72 B: 17 0.119 K: 64 B: 14 0.126 K: 71 B: 16 0.35 K: 59 B: 3 0.111 K: 58 B: 4 0.86 K: 61 B: 7 and 0.125 K: 70 B: 15.

**E. coli** SEROTYPES, RAW MILK & DAIRY PRODUCTS

**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, Domiat 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 Domiat cheese and Ice-cream in 10% and 32% respectively (Table 1).

Presence of *E.coli* in any food article is indicative of faecal 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 incremented in infection of the urinary tract, appendicular abscess, peritonitis, cholecystitis, pyelitis, pyelonephritis and wound infection (SINGH & RANGANATHAN, 1974; MOSSEL, 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), Domiat cheese (5 strains) and Ice-cream (16 strains) were serotyped

Isolated strains from raw milk proved to belong to 6 different serotypes; (6 strains) belonged to 0:K:B, (3 strains) to 0:K:B (3 strains) to 0:124:K:B and (one strain) to 0:119:K:B, (one strain) to 0:126:K:B and (one strain) to 0:55:K:B. While 19 E.coli strains isolated from Fresh cream belonged to 6 different groups, (6 strains) to 0:26:K:60:B, (4 strains) to 0:124:K:72, (4 strains) to 0:78:K:80:B, (3 strains) to 0:126:K:71, (one strain) to 0:86:K:61:B, (one strain) to 0:125:K:70:B, (one strain) to 0:111:K:58:B, (one strain) to 0:126:K:71:B, and (one strain) to 0:26:K:60:B, (one strain) to 0:111:K:58:B, (one strain) to 0:126:K:71:B. 

Out of the 16 E.coli strains isolated from ice-cream (6 strains) proved to belong to 0:26:K:60:B, (5 strains) to 0:111:K:58:B, (3 strains) to 0:124:0:72:B, and (one strain) to 0:86:K:51:B, 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 gastroentritis in infants, the responsible serotypes for such syndrome are groups of 0:26, 0:119, 0:126, 0:55, 0:111, 0:125, and 0:86. Other serotypes of E.coli (0:124 and 0:78) 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.

REFERENCES

E. coli SEROTYPES, RAW MILK & DAIRY PRODUCTS


Pyatkin, K.D. and Krivoshein, Y.J.S. (1980): Microbiology With Virology And Immunology, 2nd Ed. MIR Publisher Moscow.


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

<table>
<thead>
<tr>
<th>Product</th>
<th>Total No. of samples</th>
<th>Positive samples</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Raw milk</td>
<td>50</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>Fresh cream</td>
<td>50</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>Domiati cheese</td>
<td>50</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Ice-cream</td>
<td>50</td>
<td>16</td>
<td>32</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Serotypes</th>
<th>Raw milk</th>
<th>Fresh cream</th>
<th>Domiat cheese</th>
<th>Ice-cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>026:K60:B6</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>078:K80:B</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0124:K72:B17</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>0119:K89:B14</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0126:K71:B14</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>055:K59:B5</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0111:K58:B4</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>086:K61:B7</td>
<td>-</td>
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<td>-</td>
<td>1</td>
</tr>
<tr>
<td>0125:K70:B15</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Untyped</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>19</strong></td>
<td><strong>5</strong></td>
<td><strong>16</strong></td>
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</tbody>
</table>