PREVALENCE OF YERSINIA ENTEROCOLITICA IN RAW MILK IN ASSIUT CITY
(With Two Tables)

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SUMMARY
A sum of 120 raw milk samples were obtained from Assiut dairy farms under sterile condition and examined bacteriologically for presence of Yersinia enterocolitica. The obtained results revealed that Y.enterocolitica was recovered from 9 samples (7.5%). The isolated strains were tested for their antibiotic sensitivity. Most of the isolated Y.enterocolitica strains were sensitive to chloramphenicol, clindamycin, erythromycin, gentamicin, neomycin and streptomycin in a ratio of 77.7%, 88.8%, 77.7%, 88.8%, 77.7% and 88.8% respectively. The significance of Y.enterocolitica as a cause of foodborne- illness was discussed.

INTRODUCTION
Yersinia enterocolitica is a ubiquitous bacterium that has been receiving increasing attention as an important cause of food-borne illness. The most common clinical symp-
toms of illness in human are gastroenteritis and terminal ileitis (FEELY and SCHIEMANN, 1984). In addition to causing illness Yersinia enterocolitica is also capable of causing septicemia, meningitis and skin and eye infections (WINBLAD, 1973 and BOTTON, 1977). Major outbreaks of food borne infection caused by Y.enterocolitica have been occurred in Japan, Canada, and the United States (ASAKAWA, et al. 1973; Health and WELFARE Canada, 1976; and BLACK, et al. 1978). The bacterium has been isolated from a variety of food. The organism could be isolated from milk and milk products, including raw and pasteurized milk, cream ice-cream, and cheese by LEE (1977 b); SCHIEMANN (1978); SCHIEMAN and TOMA (1978); and MOUSTAFA, et al. (1983b). HUGHES (1979) obtained 16 isolates of Y.enterocolitica from a dairy farm and from two raw milk collection depots in Australia. SCHIEMANN (1978) reported that the incidence of Y.enterocolitica in raw milk was 18.2% in the Southern Ontario region of Canada.

In 1982 Christensen isolated Y.enterocolitica from 10% of 251 raw milk samples examined in Denmark. In a survey of 100 samples raw milk MOUSTAFA, et al. (1983 a) recovered 12 strains of Y.enterocolitica produced detectable levels of heatstable enterotoxin. The dangerous nature of Y.enterocolitica is magnified by its ability to survive and multiply in refrigerated foods at zero to 4°C (LEE, 1977 a and 1977 b).

The little information regarding the incidence of Y.enterocoltica in milk and its products in Assiut governorate, initiated us to report the prevalence of Y.enterocolitica in raw milk, as well as the sensitivity of the isolated strains to different antibiotics.

**MATERIAL and METHODS**

120 raw milk samples originating from different dairy farms at Assiut were collected under sterile conditions, and examined for occurrence of Y.enterocolitica.

**Enrichment procedure:**

One milliliter of each milk sample was transferred to 10 ml. of enrichment tryp- ticase soya broth, then incubated at 4°C for 14 days.

**Isolation and identification of Y.enterocolitica:**

After incubation, a loopful of enrichment broth was streaked directly onto a MacConkey agar plate. Agar plates were incubated for 48 h at 27°C. After incubation, colonies having characteristics of Y.enterocolitica (non pigmented to pinkish, smooth, edge entire, sometimes rough or granular) were Gram stained and identified biochemically according to the procedure described by FEELY and SCHIEMANN (1984).

**Antimicrobial susceptibility testing:**

All isolates obtained in this study were tested for antimicrobial susceptibility according to the recommended manufacturer's instructions using the following antibiotics: Ampicillin 10 mcg, Carbencillin 100 mcg, Cephalothin 30 mcg, Chloramphenicol 30 mcg, Clindamycin 2 mcg, Erythromycin 15 mcg, Gentamicin 10 mcg, Neomycin 30 mcg, Piperacillin 100 mcg, Streptomycin 10 mcg, Tetracycline 30 mcg and Tobramycin 10 mcg per disc (Difco Laboratories, Deterlot Michigan, USA).

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RESULTS

The results obtained from the examined samples are recorded in Table 1 & 2.

DISCUSSION

Table (1) shows that Y.enterocolitica was isolated and well identified from 9 raw milk samples. SCHIEMANN and TOMA (1978) and SCHIEMANN (1978) found a greater prevalence of Y.enterocolitica. Also, VIDON and DELMAS (1981) reported that 81.4% of raw milk samples contained Y. enterocolitica. Our results are agree with that mentioned by NORBERG (1981) and CHRISTENSEN (1982). While MOUSTAFA, et al. (1983 a) reported that of 100 raw milk samples tested, 12 samples contained Y.enterocolitica.

Data concerning the incidence of Y.enterocolitica in foods are well documented in many countries throughout the world. Nevertheless because of the rarity of isolation of human pathogenic serogroups from foods. The lack of sources in recovering potentially pathogenic Yersinia species from foods may be due to the different behaviour of various Y.enterocolitica serogroups with regard to enrichment procedures (VIDON and DELMAS 1981 and SWAMINATHAN, et al. 1982).

Table (2) shows the sensitivity of the isolated strains to different antibiotics. Cephalothin chloramphenicol, clindamycin, erythromycin, gentamicin, neomycin, streptomycin and tobramycin were effective against Y.enterocolitica recovered from the examined samples, while ampicillin, carbencillin, piperacillin and tetracycline had slight inhibition.

Proper sanitation and strict hygienic measures during production, handling and distribution of milk and milk products is fundamental. Also storage at freezing temperature is highly recommended, as Y.enterocolitica is sensitive to freezing.

REFERENCES


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Table (1)

Prevalence of Y. enterocolitica in the examined milk samples

<table>
<thead>
<tr>
<th>No. of examined samples</th>
<th>No. of positive samples</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>120</td>
<td>9</td>
<td>7.5</td>
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<tr>
<th>No. of Isolates</th>
<th>Percent antibiotic sensitivity (5) of isolated \textit{Veterocolliflora} from milk samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (44.4)</td>
<td>Ampicillin 5%</td>
</tr>
<tr>
<td>5 (55.5)</td>
<td>Carbencillin 5%</td>
</tr>
<tr>
<td>6 (66.6)</td>
<td>Cephalothin 5%</td>
</tr>
<tr>
<td>7 (77.7)</td>
<td>Chloramphenicol 5%</td>
</tr>
<tr>
<td>8 (88.8)</td>
<td>Clindamycin 5%</td>
</tr>
<tr>
<td>7 (77.7)</td>
<td>Erythromycin 5%</td>
</tr>
<tr>
<td>8 (88.8)</td>
<td>Gentamicin 5%</td>
</tr>
<tr>
<td>7 (77.7)</td>
<td>Neomycin 5%</td>
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<tr>
<td>5 (55.5)</td>
<td>Piperacillin 5%</td>
</tr>
<tr>
<td>8 (88.8)</td>
<td>Streptomycin 5%</td>
</tr>
<tr>
<td>4 (44.4)</td>
<td>Tetracycline 5%</td>
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<tr>
<td>6 (66.6)</td>
<td>Tobramycin 5%</td>
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