Prevalence of *E. coli* in raw milk marketed in different area of Jabalpur city

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Abstract

Present study was conducted to isolate the *E. coli* of from raw milk samples belonging to Jabalpur city. A total of 240 Raw milk Samples were aseptically collected randomly from four different areas (South Civil Lines, Medical, Aadhar Tal and Vijay Nagar Colony) of Jabalpur City. 60 Samples were collected from each area and analyzed for isolation of *E. coli* by using standard method and further confirmed by different Biochemical test. Prevalence rate of *E. coli* in different area was 5%, 2.5%, 6.6%, 8.33% 22.5% in Vijay Nagar, South Civil Lines, Medical, and Aadhar Tal Respectively. Overall prevalence rate of *E. coli* in milk samples obtained from all the area of Jabalpur city was 22.5%. Highest number of *E. coli* was isolated from Aadhar Tal where, out of 60 samples 20 samples were found to be positive for *E. coli*. Presence of this organism in milk indicates improper handling and storage.

Keywords: Raw milk, *E. coli*, Jabalpur, isolation & identification

Introduction

Milk is a lacteal secretion of animal. It is considered as a complete and ideal food. Milk offers a lot of nutrients and a great source of high biological value of protein, fat, minerals and vitamins. It also serves as a food for infants as well as older people too. In India, Milk is an important part of diet as its large number of population is vegetarian and milk and milk products are the only source of animal protein. As milk is nutrient rich, it also serves as an ideal medium for the growth of microorganisms. Milk is a perishable product and gets easily destroyed when handled poorly. Unhygienic handling and storage conditions of milk contribute to various pathogenic organisms which are responsible for life threatening diseases. Some of the organism are; *E. coli, S. aureus, Mycobacterium tuberculosis, Listeria monocytogenes* etc. out of these *E. coli* is the major contaminant in milk and milk products (Steele et al., 1997) [1]. *E. coli* is the gram negative non motile organism and responsible for causing diarrhea, UTI, Cholangitis, Cholecystis and other life threatening diseases such as neonatal meningitis and Pneumonia (Thapilyal 1999) [2]. Some of its strains are non-pathogenic too. It spreads through fecal oral route and occurrence of this organism in milk and milk products signals towards fecal contamination. So, present study was conducted to know the prevalence rate of *E. coli* in milk marketed in different areas of Jabalpur city.

Material and Methods

This study took place in Jabalpur city. Samples were randomly collected from four different area (Medical, South Civil lines, Aadhar Tal and Vijay Nagar). Total sixty samples were aseptically collected; 15 from the dairies of each area. Samples were brought to laboratory for further analysis. Isolation of *E. coli* was done from the sample of milk according to Agrawal et al. (2003) [3]. Presumptive *E. coli* isolates were then subjected to Biochemical identification as per procedure described by and Cruikshank et al., (1975) [4].

Results and Discussion

Area wise distribution of isolation of *E. coli* is depicted in table 1. In current research out of 240 samples from four different areas of Jabalpur city, 54 (22.5%) samples showed the growth of *E. coli*. 5%, 2.5%, 6.6% and 8.3% was the incidence of *E. coli* in milk samples from Vijay Nagar, South Civil Lines, Medical, and Aadhar Tal respectively. Higher incidence of this organism observed in the area of Aadhar Tal where, 20 out 60 samples were found positive for *E. coli* followed by Medical (16) and Vijay Nagar (12) localities. Whereas, lower rate of contamination with this pathogen was observed in samples from South Civil Lines i.e. 6 samples out of 60 were positive for this organism while, only 2.5% of the total (54) isolates of *E. coli* were discovered from this area.
Results for *E. coli* (22.5%) obtained in this study are in agreement with the results of Mohanti et al., 2013 [8] i.e. who reported prevalence of 21 % for *E. coli* whereas, lower rate of contamination (11%) than this study, of milk samples with *E. coli* was observed by Kumar et al., (2010) [6] from Pantnagar.

Higher results for isolation rates of *E. coli* (more than 50%) were also reported by Naqvi, (1972) [7]; Martin et al., (1986) [9]; Hanjra et al., (1989) [9]; Ahmed and Sallam, (1991) [10]; Sharma and Joshi, (1992) [11]; Adesiyun, (1994) [12]

**Table 1: Area wise distribution of prevalence of E. coli**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Areas</th>
<th>Number of samples collected</th>
<th>No. of +ve samples of <em>E. coli</em></th>
<th>Percent of positive samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vijay Nagar</td>
<td>60</td>
<td>12</td>
<td>5%</td>
</tr>
<tr>
<td>2</td>
<td>South civil lines</td>
<td>60</td>
<td>06</td>
<td>2.5%</td>
</tr>
<tr>
<td>3</td>
<td>Medical</td>
<td>60</td>
<td>16</td>
<td>6.6%</td>
</tr>
<tr>
<td>4</td>
<td>Adhartaal</td>
<td>60</td>
<td>20</td>
<td>8.33%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>240</td>
<td>54</td>
<td>22.5%</td>
</tr>
</tbody>
</table>

**Conclusion**
Present study was aimed to know the prevalence rate of e.coli in different areas of Jabalpur city. South Civil Lines area observed the lowest contamination rate where Adhar Tal observed the highest. So from This study, it can be concluded that milk market in south Civil Lines areas is comparatively better than the rest of the area, however, it is not free from this pathogenic organism. Overall contamination rate was 22.5% which indicates fecal contamination either through polluted water adulterant or any other sources. It is very important to keep quality check on production, handling and storage of milk by various regulating authorities to ensure safe consumption of milk.

**References**