

Isolation of Some Pathogens from Raw Milk of Different Milch Animals

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Abstract: In this study, it was aimed to isolate some pathogens from raw milk of different milch animals. For this aim, 36 samples of sheep milk, 25 samples of goat milk and 4 samples of cow milk were analyzed. Among the 66 total raw milk samples, *S. aureus* was isolated from 12 samples while *E. coli* was isolated from 6 samples. *Salmonella* spp. could not be isolated in any of the samples.

Key words: Raw milk, pathogens microorganisms, *E. coli*

Introduction

Raw milk represents an ideal growth medium for microorganisms (Haridy, 1992). The frequency of both small and large-scale outbreaks of illness attributed to milk borne. *Salmonella* and other microorganisms underscores the importance of milk and milk products as vehicles of human infection. For these reasons, the presence of *Salmonella* and other human pathogens in unpasteurized milk remains a public health hazard. It is known that a high percentage of clinically normal animals on dairy farms can be infected with *Salmonella* spp. and other pathogens. If environmental contamination of the milk supply were important, then farm level factors that reflect general hygiene, such as the degree of cleanliness of the facilities and animals cleanliness of milking equipment, and other factors might be important in limiting access of these agents to the milk (McEwes *et al.*, 1988). The bacteriological quality of the milk produced in our country and the raw milk used in the plants is very low. This situation is one of the most important factors which prevent the production of dairy products of good quality (Uraz, 1988). The records of the year 1996 shows that, in the city of Van, 139.210 tons of milk is obtained per year, 103.845 tons of it is cow milk, 31.205 tons of it is sheep milk, 3.810 tons of it is goat milk and 350 tons of it is buffalo milk (Anonymous, 1999).

In our country approximately 10 million tons of milk is produced per year. Milk production in Turkey consists of 89.9% cow milk, 7.97% sheep milk and 2.35% goat milk. It is reported that while 90-98% of the milk produced is processed in modern plants in developed countries, in our country only 60% of the milk produced is exposed to a commercial process and only 20% is processed under hygienic conditions. An important part of the milk produced in Turkey is sold by street peddlers under unhygienic conditions. (Tekinsen, 1995; Sahin and Gul, 1997; Hocalar, 2003).

The present study was undertaken to isolate *Salmonella* spp., *Escherichia coli* and *Staphylococcus aureus* in raw

milk of cows, sheep and goats from the farm of Veterinary Faculty of Yuzuncu Yil University.

Materials and Methods

The samples of raw milk from cows, sheep and goats in the farm of Veterinary Faculty of Yuzuncu Yil University were examined in term of *Salmonella* spp., *E. coli* and *S. aureus*. Raw milk samples were collected aseptically from individual cows, sheep and goats in sterile screw capped flasks and were directly transported to the laboratory.

S. aureus was detected with the method described by Pichardt (1993) on the Baird Parker Agar (Oxoid CM275+SR054C). *Salmonella* spp. was detected with the method described by Flowers *et al.* (1992). Coliforms and *E. coli* were carried out in accordance with the reference of Harrigan (1998) on the Violet Red Bile Agar (Oxoid CM107) and to confirm presumptive Coliform colonies were confirmed by Eijkman test.

Results and Discussion

Table 1 shows the results of microbiological analysis from raw milk investigated in this study.

Table 1: The availability of *S. aureus*, *E. coli* and *Salmonella* spp. detected in the samples of milk

Species of milk	No. of samples	<i>S. aureus</i>	<i>E. coli</i>	<i>Salmonella</i> spp.
Cows' milk	4	3 (75 %)	ND	ND
Sheep' milk	36	6 (16.6%)	1 (3.6%)	ND
Goats' milk	25	3 (12%)	5 (20%)	ND
Total	66	12 (18.18%)	6 (9.09%)	ND

ND : Not determined

As seen from Table 1, *S. aureus* was isolated from 3 cows' milk samples, 6 sheeps' milk samples and 3 goats' milk samples. While *E. coli* was not detected in cows' milk samples; it was detected in 1 sheeps' milk sample and 5 goats' milk samples. *Salmonella* spp. was not detected in all samples analysed. Oksuz *et al.*,

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(2003) reported *E. coli* O157:H7 at the rate of 1% in 100 samples of raw milk. Soomro et al. (2002) isolated *E. coli* in 57% of the 100 raw milk samples. Alisarli and Solmaz (2003), detected *S. aureus* 38% of the 100 raw milk samples. Coliform organisms and *S. aureus* are good indicators of the standard of hygiene and handling. According to Harrigan and McCance (1976) coliform bacteria count should be less than 200/g in food. The existence of the Coliforms has been considered as leading to the fact that the product was subject to process under inefficient hygienic conditions (Harrigan and McCance, 1976; Altug and Bayrak, 2003). Kivanç et al. (1992) detected *Salmonella-Shigella* in 2 milk samples obtained from Eskisehir markets. Also they detected *S. aureus* as 1.82×10^3 cfu /ml.

Pathogenic bacteria in milk has been a major factor for public health concern since the early days of the dairy industry. Many diseases are transmissible via milk products. Traditionally raw or unpasteurised milk has been a major vehicle for transmission of pathogens (Vasavada, 1988). The health of dairy herd, milking conditions are basic determinant of milk quality. Another source of contamination by microorganisms is unclean teats. The use of unclean milking and transport equipment contributed also to the poor hygienic quality (Bonfoh et al., 2003).

As a result of the research, the samples of raw milk examined contained pathogen microorganisms. This may indicate that analyzed milk can contribute a potential risk for public health in the cases that it is consumed or used in the production of dairy products such as cheese, butter, cream and ice cream without being pasteurized or being subjected to a sufficient heat process.

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