

SHORT REPORT

Bacterial contamination in some local brand milk and milk products bottles

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World Health Organization has estimated that about 70 percent of diarrhoeal diseases may be due to contaminated food and water and they are responsible for the majority of reported illness annually. However, a great number of illness were unreported. Contaminated water and food increases the risk of enteric infections including cholera, shigellosis and salmonellosis [1-3]. Thus, it is to find out the level of contamination by bacteria in some milk and milk products in bottles with different brands which were prepared locally and sold in the markets.

Milk bottles with different brands prepared locally were collected from marts during March 2000 to September 2001 and transported to the laboratory using cold chain. A total of 78 samples; containing three samples of each product were collected. It comprised of 42 milk bottles (local product with different brands) from 14 places; 9 samples of milk juice from 3 places; 12 samples of yogurt in bottles (local product with different brands) from 4 places and 15 samples of freshly prepared yogurt without ice from 6 places. The controls were the exported brands (Table 1).

Presumptive test by multiple tube technique was done using MacConkey broth purple, with single and double strength, determined the presence of coliforms and faecal coliforms, incubated at 37°C and 44.5°C respectively. Confirmation was done using Brilliant Green Bile medium with their corresponding presumptive positive tube in respective temperatures [4].

Approximately 20 ml of samples were spinned and the sediment was inoculated onto Blood, MacConkey, Salmonella-Shigella, Mannitol Salt and Thiosulphate Citrate Bile Sucrose agar for primary isolation. Simultaneously, enrichment media as Selenite F and Alkaline Peptone water were used for secondary inoculation. The suspected colonies were then picked up from respective media and confirmed by biochemical reactions and serotyping [5].

All the tested 42 milk bottles at that time were contaminated with coliforms with faecal coliforms (Table 1). The most probable number per 100ml of milk was higher i.e (>1800MPN/100ml) than yogurt.

Table 1. Bacteriological analysis of pasteurised milk and yogurt with different brands

Type of milk	Tested samples & date	Coliforms	Faecal coliforms	Other bacteria
Milk bottles pasteurized (local packs)	42 (22-5-01 to 7-8-01)	100% (240 - >1800 MPN/100ml)	100% (23 - >1800 MPN/100ml)	EPEC (35.71%) O26K60, O114K90 O148K+, O159K+
Milk juice bottles (local)	9 (12-6-01 to 24-7-01)	nil	nil	Fungi
Yogurt (local packs)	45 (12-6-01 to 24-7-01)	40% (240 - >1800 MPN/100ml)	40% (17 - 240 MPN/100ml)	nil
Yogurt fresh (local)	15 (19-6-01 to 21-8-01)	2.5% (23 - 43 MPN/100ml)	25%	<i>Lactobacillus</i>
Dutchmill	15-1-01	<2	<2	nil
Viva	15-1-01	<2	<2	nil
Thai	24-1-01	<2	<2	<i>Lactobacillus</i> .

It was also demonstrated that enteropathogenic *Escherichia coli* (EPEC) serotyped O26K60, O114K90, O148K+ and O159K+ were isolated. Although all milk juice samples were neither contaminated with coliforms nor faecal coliforms, fungi was isolated in one sample. The yogurt samples in bottles were contaminated with coliforms and faecal coliforms, however, *Lactobacillus* species was not isolated from the tested yogurt sample bottles. In case of freshly prepared yogurt, the coliform count was significantly lesser than the milk samples ($p < 0.02$); faecal coliforms were not isolated but *Lactobacillus* spp. was isolated (Table 1). The control samples were not contaminated with coliforms and faecal coliforms.

There were reports that outbreak of *Salmonella* serotype Typhimurium infections was associated with drinking unpasteurized milk in USA during 2002-2003 [6]. Foodborne pathogens contamination in milk was reported [7]. Milk is always served as a reservoir for the growth of bacteria. In this study, *Lactobacillus* spp. was only isolated from freshly prepared yogurt and it highlights the fact that locally

prepared fresh yogurt without ice is safe to consume. Thus, environmental sanitation and personal hygiene still play important roles to reduce bacterial enteric infections. Standard pasteurization milk is always essential.

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