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Organoleptic and probiotic quality of curd as affected by the preparation techniques used by the households and commercials of urban Vadodara

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ABSTRACT

Thirty households and 30 commercials were studied for their consumption and preparation techniques using semi structured questionnaire. The results showed that 73% of the subjects consumed curd on daily basis. The curd preparation techniques followed by the subjects of both households and commercial settings differed in the type of milk, source of milk, washing techniques of utensils used for curd setting and curd storage practices. The organoleptic scores showed that branded curd scored higher than hoseholds and other commercial outlets. All the curd samples analyzed had adequate number of probiotic bacteria *i.e.* in the range of $5.1x10^{10} – 1.2x10^{11}$ for Lactobacilli and *Streptococcus thermophilus* and $2x10^{8} – 7.5x10^{8}$ for *Bifidobacteria*. required for alleviating various health problems. Higher counts of *E. coli* and *Shigella* were detected in commercial curds as compared to household curds. Curds of all households and commercials except branded samples were contaminated with *L. brevis* and *L.curvatus* that resulted in low scores for flavour and texture.

Key words : Fermented milk, Probiotic cultures, Organoleptic qualities, *E.coli*, Shigella, Salmonella

Curd, traditionally known as Dahi is known to have high medicinal values in Ayurveda and have utmost importance in Indian diet. It is traditionally prepared at household levels but now-a-days it is available commercially too. Around 9.1% of total milk produced in India is converted in to curd and this sector is showing an annual growth rate of more than 20% per annum (Garg, 1988). Curd is generally prepared domestically by traditional method which involves inoculating boiled and cooled milk with a day old curd and held at ambient temperature in preferably earthen pots until it sets into a curd which may take 12 to 24 hours (Singh, 2006).

A good quality curd is firm with uniform consistency, sweet aroma, mild acid taste and smooth glossy surface (Keith, 1985). During preparation and handling of curd, poor quality milk, unhygienic practices associated with the process and use of wild type of starter culture may give rise to poor grade curd (Masud *et al.*, 1991).

However, curd is the only uncooked fermented product consumed and recently a lot of interest is generated about the probiotic content of fermented foods. Probiotics are the live probiotic cultures when ingested in right numbers, beneficially affect the host by improving its intestinal microbial balance. Friend and Shahni (1984) and Sanders (1999) showed a positive physiological impact of probiotic bacteria on the biomarkers of diarrhea, lactose intolerance and colon cancer when daily dose of $10^{9} – 10^{10}$ probiotic organisms were consumed (*i.e.* intake of 100ml yogurt per day). Curd being widely consumed in this country, its probiotic status needs to be studied in both terms of its number and viability to conclude about its ability to serve as probiotic food. Several undefined Lactobacilli species are known to be involved in curd making. However, its effect on quality of curd remains a mystery. Therefore, this study was designed to survey curd consumption and preparation technique preferred by households and commercial settings in urban Vadodara along with determination of its probiotic and organoleptic qualities.

METHODOLOGY

Thirty households belonging to various ethnic groups and 30 commercial outlets willing to participate in the study were selected from urban Vadodara. The data regarding curd consumption pattern, curd preparation techniques and sanitation and hygienic practices prevailed by the households and commercials were collected using semi structured preteseted questionnaire.

Sample collection for determining pH and probiotic quality:

On the basis of data obtained from curd consumption and curd preparation techniques, 40 curd samples were collected for determination of probiotic and organoleptic quality. Twenty household curd samples out of which 5 each of ethnic groups (North Indian, South Indian, Bengalis, Gujaratis and Marathis) and 20 commercial curd samples from branded curds, local dairies, restaurants and