

Development and quality assessment of functional probiotic yoghurt drink from sweet cream buttermilk

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*A new functional yoghurt drink consisting of banana and honey was developed from Sweet Cream Buttermilk (SCBM) and its physicochemical, microbiological and sensory characteristics were assessed with respect to plain and skim milk yoghurt drinks. Storage stability of drinks prepared by using standard probiotic culture of lactobacillus acidophilus (La5) was determined in terms of acidity, strain viability and consumer acceptability of final products. Incorporation of banana and honey decreased post acidification and increased the carbohydrate(13.15-13.37%), proteins (2.23-2.25%) and ash content (0.53%). It was observed that the total solid content was increased from 5.72±0.17 % in plain yoghurt drink (PYD) to 16.39±0.07% in skim milk based drink (SYD) and 16.38±0.04% in buttermilk based drink (BYD). Greater count of probiotic cells was observed in Buttermilk based yoghurt drink (5.9*10⁸ CFU/ml) than in Skim milk based yoghurt drink (1.4*10⁸ CFU/ml) at the end of 30 days of refrigerated storage. Fifty percent of the consumer preferred refrigerated Buttermilk based yoghurt drink for 27 days.*

Keywords: Sweet cream buttermilk, Probiotic yoghurt drink, banana, honey, quality assessment

Introduction

Foods that may provide health benefits beyond basic nutrition are defined as functional foods (Verschuren, 2002). Knowledge of the relationship between diet and health had led to new insights into the effects of food on physiological functions and health. These insights generate interest and stimulate the food industry to match consumers' desire for short- and long-term health benefits through food products that promote health and well-being and reduce the risk of chronic diseases.

Fermented milk products are widely consumed for their functional benefits and refreshing effects. These products have already received a positive health image in food markets (Jelen *et al.*, 2003), which can be further enhanced by the addition of probiotic i.e live bacteria with therapeutic properties (Lourens-Hatting and Viljoen, 2001). The majority of probiotics are lactic acid bacteria, especially *Lactobacilli*, and *Bifidobacteria*. Drinkable yogurt, as also referred as stirred yogurt with a low viscosity, is a growing area of interest based on its convenience, portability, and ability to deliver all of the health and nutritional benefits of stirred or set yogurt (Eder, 2003; Thompson *et al.*, 2007). The low viscosity is obtained through high agitation, which breaks the coagulum after the fermentation period, before the product is bottled and refrigerated (Tamime and Robinson, 1985). Sweet cream Buttermilk (SCBM) is an important dairy byproduct left behind after removal of butter during churning of sweet cream. The gross chemical

composition of sweet cream buttermilk is almost similar to that of skim milk Shaikh and Rathi (2009). The shelf life of buttermilk is short, as the taste of the buttermilk changes fairly quickly because of oxidation of the membrane material content. Whey separation is common in buttermilk from fermented cream, and product defects are therefore difficult to prevent. Churning of 1 kg of 40% milk fat cream will generate roughly equal parts of butter and buttermilk so production of buttermilk can be estimated to be close to that of butter production (Morin *et al.*, 2007). Other organized dairy industries who produce butter are also releasing buttermilk in larger volume inside the country. Information on the utilization of BM is probably not sufficient for its commercial adaptation and in most of cases BM is drained out or cattle fed because of lack of economically viable methods.

Infectious diarrhea is a major world health problem, responsible for several million deaths each year. Probiotic microflora displays numerous health benefits beyond providing basic nutritional value. The health benefit reported of probiotics is the improvement in gut health and the prevention of intestinal infections and stimulating the immune system (Kailasapathy and Chin, 2000; Salminen and Gueimonde, 2004). These bacteria can potentially provide an important means to reduce infectious diarrheal diseases, responsible of several million deaths, mostly among children in developing nations each year (FAO, 2006). Maintaining the probiotic