DEVELOPMENT AND EVALUATION OF PROBIOTIC YOGHURT (*Bifidobacterium* spp.)

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2016

ABSTRACT

Yoghurt is one of the most important fermented milk products, which has gained great popularity throughout the world for its recognized sensorial, nutritional and health benefits. This study was conducted to investigate nutritional, physical, microbial and sensorial properties of probiotic (*Bifidobacterium* spp.) added yoghurt. Probiotic added yoghurt was prepared using skim milk and its nutritional, sensorial and microbial properties were analysed at day one and during the storage period of four weeks. This research was performed in milk processing unit of Department of Eastern University, Sri Lanka. The study was carried out using Completely Randomized Design with five treatments and three replicates. Probiotic was added to the yoghurt in the rate of 0%, 0.1%, 0.2%, 0.3% and 0.4% on weight basis.

At day one quality attributes such as dry matter, ash, fat, reducing sugar, total sugar, pH and titratable acidity were not ($p > 0.05$) differ among the types of yoghurt samples. Syneresis was high in 0.4% probiotic added yoghurt (40.73±2.05%) and was lower in yoghurt without probiotic (37.70±1.32%). Syneresis increased with increasing percentage of probiotic. During the storage period, dry matter, total sugar, reducing sugar, pH, and titratable acidity ($p < 0.05$) changed different yoghurt samples. In case of ash and fat, slight changes were observed. At the end of storage 0.4% probiotic added yoghurt showed higher value of dry matter, ash and titratable acidity (21.87±1.40%), (1.00±0.40%) and (0.67±0.04%), respectively. On the other hand, yoghurt without probiotic showed higher value for reducing sugar, total sugar and pH (2.17±0.02%), (10.72±0.21%) and (4.38±0.01), respectively. At the end of storage yoghurt without probiotic showed low value of dry matter, ash as (15.80±1.93%) and (0.67±0.46%), respectively and 0.1% probiotic added yoghurt

showed low value (0.62±0.02%) of titratable acidity while 0.4% probiotic added yoghurt showed low value of reducing sugar, total sugar and pH as (2.05±0.01%), (10.32±0.23%) and (4.15±0.04), respectively. During the storage period dry matter, ash and titratable acidity increased with increasing concentration of probiotic in the yoghurt. Reducing sugar, total sugar and pH decreased with increasing concentration of probiotic. Colony forming unit decreased with the storage period. At the end of the storage all treatments of yoghurt showed reduced value of colony forming unit than second week. Yoghurt without probiotic showed low value ($4.13*10^5$CFU/ml) of colony forming unit than other treatments. The results of the sensory evaluation showed that organoleptic parameters had influence on overall acceptability of yogurt product. According to the panelist preference, the yoghurt without probiotic was highly preferred for their texture, colour and flavour. Yoghurt with 0.3% probiotic was highly preferred for their taste and overall acceptability.

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