Effect of Incorporation of Finger Millet (*Eleusine coracana*) Flour Concentrate on Proximate Composition, Sensory and Microbial Properties of Functional Butter

E. Disanth[1]*, S. Anand Kumar[1], S. Varthani[1], S. Piratheepan[1] and D.D. Jayasena[2]
[1]Department of Animal Science, Faculty of Agriculture, University of Jaffna, Sri Lanka
[2]Department of Animal Science, Faculty of Animal Science and Export Agriculture, Uva Wellassa University of Sri Lanka, Badulla, Sri Lanka
*disanthdisanth97@gmail.com

There is a growing consumer demand for low fat probiotic butter due to their health beneficial properties. Finger millet powder (FMP) rich in dietary fibre can be fortified into probiotic butter to increase health attributes and commercial viability. Therefore, the aim of this study was to elucidate the impact of incorporation of FMP to probiotic butter on proximate composition, sensory properties and microbial properties over refrigerated storage. Pasteurized cream was inoculated with 5% of starter culture containing *Lactococcus lactis* subsp. *cremoris*, *Leuconostoc*, *L. lactis* subsp. *lactis* and *L. lactis* subsp. *lactis biovar diacetylactis*, enriched with FMP at 0%, 2%, 5% and 6% (w/w). Samples were incubated at 20 °C for 18 hours and finally ripened at 5 °C for 5 hours to produce different treatments. The proximate composition, sensory properties and microbial properties of the fortified probiotic butter were determined monthly for three month of period. Results showed that level of incorporation of FMP had significant effect on appearance, colour, flavour and overall acceptability of butter throughout the storage. In this regards, control sample (0% FMP) showed the highest scores for colour and appearance throughout the storage period compared with other treatments. However, probiotic butter fortified with 5% FMP had the highest scores for taste, flavour and overall acceptability irrespective of storage period. As results revealed, 2% FMP incorporated butter had a better spreadability than other treatments. The crude fat, crude protein, moisture and ash contents of FMP incorporated butter ranged from 75.98-79.40%, 1.2-1.57%, 15.62-15.71% and 2.11-2.15%, respectively. Protein and fat contents significantly decreased over the storage period ($p<0.05$). Microbiological results indicated zero coliform counts in all samples until three months. In conclusion, butter fortified with 5% FMP was selected as the best formulation for the development of functional butter with better nutritional composition than those of others.

Keywords: Butter, Dietary fibre, Finger millet powder, Prebiotics, Probiotics