

DEVELOPMENT OF NATURAL ANTIOXIDANT SOURCES INCORPORATED PROBIOTIC CREAM CHEESE

M.S.N. Madurasinghe¹, D.U. Rajawardana², C.A.K. Dissanayake¹, S.A.S.
Jayawardana² and V.A. Wijesekara¹

¹*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata
University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*Department of Food Technology, Industrial Technology Institute, Malabe, Sri
Lanka.*

The potential for novel food products with functional properties is enormous. This study aimed to incorporate natural antioxidant sources into probiotic cream cheese. Three antioxidant sources (tomato, garlic and pepper powders) were used in this study. Sensory evaluations were conducted using 10 trained panelists. First, three levels of powdered tomato (1% (TP1), 1.5% (TP2), and 2% (TP3)) were added and the TP2 was selected as the best level. Secondly, TP2 was tested with three levels of garlic [0.25% (TG1), 0.5% (TG2), and 0.75% (TG3)] and TG2 was selected as the best proportion. Thirdly, TG2 was tested with three levels of powdered pepper [0.25% (TB1), 0.5% (TB2), and 0.75% (TB3)], and the best treatment (TB2) was selected as the final product. Data were statistically analyzed using the Kruskal-Wallis test ($p < 0.05$). The nutritional profile, physicochemical, microbiological, functional, and organoleptic properties of the final product were evaluated over 21 days of storage at 4°C. The total fat, saturated fat, trans fat, protein, carbohydrate, energy, sodium and potassium contents were 22.4%, 17.8 g 100g⁻¹, 0.1 g 100g⁻¹, 12.8%, 5.1%, 273 kcal 100g⁻¹, 0.7 g 100 g⁻¹, 0.2 g 100 g⁻¹, respectively. The pH, titratable acidity, firmness, moisture percentage, and total solids, were 5.47±0.05, 0.09±0.01, 0.96±0.25, 59.78±0.46%, and 40.22±0.46%, respectively. These values complied with the Sri Lanka standards (SLS) for cream cheese. Color values revealed L* (54.27±2.00), a* (4.08±0.13), and b* (19.68±0.52). The total live starter culture count was higher than 10⁸ CFU g⁻¹ and didn't change significantly during storage, revealing the product as potentially probiotic. Yeast and mold, and coliform counts remained within the safe range. The antioxidant properties, Total Phenolic Content, 1,1-diphenyl-2-picrylhydrazyl radical scavenging, and Total Flavonoid Content were 196.14 mg GAE 100 g⁻¹, 186.56 TE 100 g⁻¹, and 16.28 mg QE 100 g⁻¹, respectively. The developed cheese was in the acceptable range in sensory properties for up to 14 days of storage. In conclusion, organoleptically accepted, antioxidant-rich probiotic cream cheese can be developed successfully using powdered tomato, pepper, and garlic.

Keywords: Garlic powder, Pepper powder, Tomato powder