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A Vegan Innovative Approach with Commercial Potential, a Coconut-Based Dessert Formulated in Sri Lanka

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Abstract

In recent years, the trend of veganism and inclination towards plant-based milk derivatives has been rapidly increasing worldwide. As far as the Asian tropical region is concerned, coconut is one of the major economic crops that is increasingly being grown and utilized for many food products. The general objective of the study was to develop a vegan fermented dessert formula using coconut milk extract as a sustainable alternative to dairy-based yoghurt-like products, particularly targeting vegans and other non-dairy consumers. The product preparation was done according to the major steps in yoghurt processing, yet at different conditions: milk pasteurization at 90°C, adding sweeteners (sugar, stevia mix) and stabilizer (plant gum composite), incorporation of non-dairy-favored culture, incubation at 43°C for 4 hours and refrigerated storage (4°C). The product was developed undergoing two sensory evaluation stages; selection of the best plant gum composite from guar gum: CMC and Xanthan: CMC (1:1) composites, and selection of the product's optimum sweetness out of 10%, 15%, and 20% levels of sugar: stevia mix at 5:1 ratio. According to the results, the product prepared using Xanthan: CMC gum composite with 15% sweetening capacity was selected as the final product formulation and was taken for quantitative analyses as two products; the sodium benzoate preservative added sample and the control. Regarding physicochemical analyses, pH, syneresis, and water holding capacity varied between 5.47-4.95, 5.46-13.68 %, and 94.49-85.81 %. The overall texture profile analysis showed that the product had better textural characteristics, similar to yoghurt-like products. The proximate analyses of the product were 40.02±0.25 % moisture, 0.51±0.02 ash %, 2.20±0.01 % protein, 19.17±0.05 % fat and 0.12±0.01 % fibre. The fatty acid (FA) profile determined through the GC-FID analysis reported that most of the fat was composed of saturated FAs, particularly lauric acid (44.01 %). Moreover, a significant antioxidant potential was reported in the product concerning TPC (0.97±0.01 mg GAE/g) and ABTS (2.69±0.03 μmol Trolox/g) assays. The probiotic viability was optimal for the growth of lactic acid bacteria throughout the studied shelf-life period (>10^6 CFU/g). In conclusion, the developed product was acceptable even in the absence of preservatives, making it a better non-dairy probiotic alternative. Consequently, the use of coconut milk as a non-dairy probiotic matrix in this product development can be recommended as a promising tool to address the current economic challenges most developing countries face worldwide.

Keywords: *Coconut milk, Vegan, Non-dairy, Probiotic, Stevia*