

DEVELOPMENT OF A READY-TO-PREPARE SPIRULINA (*Arthrospira platensis*) INCORPORATED MILKSHAKE POWDER PREMIX

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Spirulina, a blue-green alga, is valued as a super-food for its rich nutrient content, especially protein. This research aimed to develop a ready-to-prepare spirulina milkshake powder to meet the growing demand for convenient functional foods among health-conscious consumers. Commercially available spirulina, milk powder, pumpkin flour, roasted and powdered flax seeds, vanilla, salt and sugar were used to formulate three prototypes, by changing ingredient ratios, to fulfill a significant percentage of Recommended Dietary Allowance (RDA) of protein for an adult. The prototype with the best organoleptic properties (appearance, color, odor, mouthfeel, taste, aftertaste, overall acceptability) which contained 20% of spirulina was selected from the sensory evaluation (n=30; untrained panelists). The proximate composition, pH, total soluble solids (TSS) and color of the final product were analyzed using standard methods. Keeping quality was determined by the Total Plate (TP) and Yeast and Mold (YM) counts over one month under ambient storage conditions (30°C). The moisture, ash, crude protein, crude fiber, crude fat and carbohydrate contents of the final product were 4.00±0.03%, 5.82±0.001%, 18.89±0.04%, 24.23±2.44%, 11.41±0.04% and 35.42±4.43% respectively. Each 30 g serving of the product provides 10% of RDA of protein for a 60 kg adult, 128.3 kcal and 29% of RDA of dietary fibers. The pH, TSS and color values (L*, a*, b*) of premix were 6.54±0.013, 10.9±0.26°Brix, 35.58±1.50, 0.93±0.10 and 7.65±1.33 respectively. The TP and YM counts remained within the safe levels (<10⁵, <2×10⁵ CFU g⁻¹ respectively) and organoleptic properties by a duo-trio test remained unchanged throughout the one-month storage period. In conclusion, a ready-to-prepare milkshake powder premix which fulfils 10% and 29% of the RDA of protein and dietary fiber for an adult, can be successfully developed by incorporating spirulina. This product serves as a convenient and shelf-stable food option for athletes, vegetarians, and health-conscious consumers.

Keywords: Functional foods, Health-conscious consumers, Recommended dietary allowance, Super-food