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Development and Evaluation of a Low-Fat Plant-Based Emulsion Mimicking Mayonnaise Using Hibiscus Leaf Hydrocolloids

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Abstract: *The present research aimed to develop and optimize a low-fat, plant-based functional emulsion using aqueous hibiscus leaf mucilage as a natural stabilizing and structuring agent. The study explored the potential of hibiscus leaf mucilage, in combination with green pea paste and corn starch, to form a stable oil-in-water emulsion with reduced reliance on conventional fat-based emulsifiers. Natural spices, acidulants, and a minimal amount of Sunflower oil were incorporated to achieve desirable texture, spreadability, and sensory acceptability. The functional objective of the study was to utilize the inherent polysaccharide- rich and fibre-containing properties of hibiscus leaves to enhance the nutritional and technological value of the emulsion. The developed formulation demonstrates the feasibility of using underutilized leafy plant resources and natural hydrocolloids in the creation of clean-label, vegan, and low-fat functional spreads, thereby contributing to sustainable and health- oriented food product development.*

Keywords: Hibiscus leaf mucilage, Plant-based emulsion, Functional food, Low-fat spread, Natural hydrocolloids, Vegan formulation, Clean-label ingredients, Dietary fibre enrichment, Emulsion stability

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