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The development and physical properties of high-protein, sugar-free macarons obtained from whey protein isolate and erythritol

Nastaj, M.¹, Sołowiej, B.¹, Szafrńska, J.¹, Terpiłowski, K.², Kucia, W.³, Tomasevic, I.B.⁴, Pérez-Huertas, S.⁵

1- Department of Dairy Technology and Functional Foods, Faculty of Food Sciences and Biotechnology, University of Life Sciences in Lublin, Poland

2- Department of Physical Chemistry-Interfacial Phenomena, Maria Curie Skłodowska University, Poland

3 - Wiesław Kucia's Artistic School in Lublin, Poland

4 - DIL German Institute of Food Technologies, Quakenbrueck, Germany

5 - Department of Chemical Engineering, University of Granada, Granada, Spain

The aim of this study was to obtain the sugar-free WPI-based macarons with the erythritol addition. Whey protein isolate (WPI) solution (20%, w/v) was whipped and erythritol was added to foam at the concentrations of 20, 40 and 60g and the almond flour at 125 g. The rheological properties (τ , G' , G'' and $\tan(\delta)$) and stability of the macaron batters before baking were tested. To develop macarons, batters were solidified at 147 °C for 12 min in the oven. The textural, surface properties (roughness and colour) as well as microstructure and water activity were evaluated for the macarons. It was possible to obtain macarons over the entire range of erythritol tested. Even the smallest amount of erythritol (20g) led to a preservation of the macaron structure. The middle erythritol concentration (40g) improved the stability of the batters, their rheology and it was the most effective for air pockets stabilization during baking, however, its largest addition (60g) resulted in an increase in the final macaron volume. Increased erythritol addition improved mechanical properties, shelf life, produced a smoothing effect on the macaron surfaces and demonstrated a significant effect on their colour coordinates.

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Development of Consumer-Acceptable Ready-to-Prepare Complementary Porridge Blend from Cocoyam (*Xanthosoma sagittifolium*)

Abena Boakye¹, Faustina Dufie Wireko-Manu¹, Ibok Oduro¹, William Otoo Ellis¹, María Gudjónsdóttir² and Ioannis S. Chronakis³

¹ Kwame Nkrumah University of Science and Technology, Department of Food Science and Technology, UPO, PMB, Kumasi, Ghana

² University of Iceland, Faculty of Food Science and Nutrition, Reykjavík, Iceland

³ Technical University of Denmark, DTU-Food, Nano-Bio Science Research Group, Kongens Lyngby, Denmark

Cocoyam (*Xanthosoma sagittifolium*) is food to millions in tropical regions; its use span complementary, convalescence, and everyday meals. However, the difficulty and time-consuming nature of preparing traditional dishes limit its use. This study develops convenient, complementary porridge blends from cocoyam, millet and cowpea and investigates the organoleptic properties for consumer acceptance. Ten formulations were generated, estimating a 10% minimum protein content. Other base ingredients for complementary meals were added equally to complete the formulations. Forty untrained mothers screened prepared porridges, followed by a Quantitative Descriptive Analysis (QDA) of the two top-ranked formulations. These were updated per the QDA comments, and their acceptance was evaluated by a 95-member consumer panel. Aroma and colour had a positive influence on the acceptance of porridges ($r^2 = 0.58, 0.49$, respectively; $p < 0.01$), confirming the QDA panel's selection as important attributes in complementary foods. The most influencing attribute to overall likeness was taste ($r^2 = 0.75$; $p < 0.05$). Likeness strongly correlated ($r^2 = 0.82$; $p < 0.01$) to consumers' willingness to feed babies with porridge and was highest for Blend F2 (30% cocoyam). The findings suggest high consumer acceptance of the complementary porridge blends, which can be further exploited to meet consumer needs for convenience and promote the food application of cocoyam.