

Physicochemical and Sensory Properties of Gluten-Free Semolina Produced from Blends of Cassava, Maize and Rice

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Abstract : The proximate, functional, pasting, and sensory properties of semolina from blends of cassava, maize, and rice were investigated. Cassava, maize, and rice were milled and sieved to pass through a 1000 μm sieve, then blended in the following ratios to produce five samples; FS₁ (40:30:30), FS₂ (20:50:30), FS₃ (25:25:50), FS₄ (34:33:33) and FS₅ (60:20:20) for cassava, maize, and rice, respectively. A market sample of wheat semolina labeled as FSc served as the control. The proximate composition, functional properties, pasting profile, and sensory characteristics of the blends were determined using standard analytical methods. The protein content of the samples ranged from 5.66% to 6.15%, with sample FS₂ having the highest value and being significantly different ($p \leq 0.05$). The bulk density of the formulated samples ranged from 0.60 and 0.62 g/ml. The control (FSc) had a higher bulk density of 0.71 g/ml. The water absorption capacity of both the formulated and control samples ranged from 0.67% to 2.02%, with FS₃ having the highest value and FSc having the lowest value (0.67%). The peak viscosity of the samples ranged from 60.83-169.42 RVU, and the final viscosity of semolina samples ranged from 131.17 to 235.42 RVU. FS₅ had the highest overall acceptability score (7.46), but there was no significant difference ($p \leq 0.05$) from other samples except for FS₂ (6.54) and FS₃ (6.29). This study establishes that high-quality and consumer-acceptable semolina that is comparable to the market sample could be produced from blends of cassava, maize, and rice.

Keywords : semolina, gluten, celiac disease, wheat allergies

Conference Title : ICFDST 2023 : International Conference on Food Design, Science and Technology

Conference Location : Zanzibar, Tanzania

Conference Dates : August 24-25, 2023