

Gluten-Free Arrowroot Crackers for Enhanced Nutrition Profile and Sensory Attributes

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Arrowroot (*Maranta arundinacea*) is considered as an underutilized flour source in Sri Lanka. This study aimed to develop a gluten free cracker by incorporating arrowroot and cassava flour to evaluate their nutritional and physicochemical properties. Four different flour ratios were made using arrowroot to cassava flour viz., 0:1, 1:2, 2:1, 1:1. The control was prepared using cassava flour with no arrowroot flour. Sensory evaluation was carried out using a completely randomized design to assess taste, texture, appearance, mouthfeel, and overall consumer acceptance. Based on sensory evaluation, the cracker formulation with a 2:1 ratio of arrowroot to cassava was identified as the most preferred formulation and physicochemical properties, and proximate composition were determined for it. When compared to the control sample, the newly developed cracker had significantly higher levels of crude fiber ($4.21 \pm 0.15\%$), fat content ($15.63 \pm 0.71\%$), protein ($4.18 \pm 0.19\%$), and total ash contents ($6.12 \pm 0.11\%$). Moreover, newly developed cracker had significantly lower carbohydrate content ($65.7 \pm 1.98\%$) compared to the control sample ($70.60 \pm 0.18\%$). Texture parameters such as hardness, fracturability, and chewiness in the selected cracker exhibited a notable decrease after six weeks of storage. Over a seven-week period of shelf-life study, significant increases in moisture content were noted, with rates of 2.94% for HDPE, 7.79% for LDPE, and 4.73% for PET, indicating a failure to maintain the desired moisture level. In conclusion, this study suggested that utilization of arrowroot and cassava flour in developing gluten free crackers is feasible, thus increasing the potential of utilizing arrowroot flours in the food industry.

Keywords: *Arrowroot; Cassava; Cracker; Gluten-free; Physical properties*

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