

DEVELOPMENT OF READY-TO-SERVE DRINK USING KING COCONUT (*Cocos nucifera* var. *aurantiaca*) MESOCARP

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King coconut (KC) water is primarily exported, while the mesocarp and endocarp (husk) are often discarded, requiring two to three years to decompose naturally. This study aimed to investigate the percentages of each component of KC waste, antioxidant properties of king coconut mesocarp extract (KCME) and innovate a ready-to-serve (RTS) beverage using KCME, contributing to zero waste management. King coconut waste was separated into mesocarp without fiber, endocarp, coir dust, fiber, perianth and KCME, with each component's percentage determined accordingly. The waste components were differentiated as follows: mesocarp without fiber (7.82%), endocarp (7.33%), coir dust (14.34%), fiber (10.18%), perianth (4.33%) and KCME (16.29%). Antioxidant activities of KCME and endocarp were assessed by DPPH radical scavenging assay and oxygen radical absorbance capacity (ORAC). Phytochemicals were measured by total phenol content (TPC) and total flavonoid content (TFC). Mineral content of the KC endocarp was determined using an ICP-MS. The high antioxidant properties of KCME facilitated the development of a RTS beverage. Approximately 30% of mechanically extracted KCME was combined with various additives in accordance with the SLSI standards (SLS 729:2010) for RTS beverages to prepare the initial formulation. Sensory evaluations were conducted to refine the formulations and enhance consumer acceptability. The final formulation contained 15% KCME. The prepared RTS beverage was hot filled into glass bottles. The quality attributes of final formulation were determined, with TPC, TFC, DPPH, and ORAC assays, which resulted in 880.65 ± 12.8 mg GAE 100 mL^{-1} , 8.11 ± 0.17 mg QE mL^{-1} , 75.42 ± 1.48 $\mu\text{g mL}^{-1}$, 232.84 ± 67.75 mg TE 100 mL^{-1} , respectively. Color values (L^* , a^* , and b^*) were 16.57 ± 0.19 , 5.91 ± 0.20 , and 7.98 ± 0.08 , respectively. The pH, titratable acidity, TSS, total solids, and viscosity were 2.94 ± 0.02 , 18.34 ± 0.12 , 3.2 ± 0.08 , 3.34 ± 0.01 , and 0.96 ± 0.01 , respectively. Additionally, the mineral content of KC mesocarp was higher compared to the commercially available tea. This study confirms that king coconut mesocarp extract is an excellent ingredient for formulating a ready-to-serve beverage with significant therapeutic values.

Keywords: Antioxidants, Minerals, Phytochemicals, RTS beverage, Zero waste management