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### Value-added coconut skim milk beverage from defatted desiccated coconut kernel

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#### Abstract

Defatted Desiccated Coconut Kernel (DDCK), a by-product generated during virgin coconut oil production with proven health benefits. The present study was designed to develop a low-fat beverage using coconut skim milk obtained from DDCK to increase consumer demand for non-dairy milk alternatives. By product of DDCK was obtained from virgin oil processing plant at Coconut Research Institute Sri Lanka and it was used to milk extraction with water addition. According to preliminary sensory tests, cold water extraction with a 1:4 ratios after 1-hour soaking was favored. Three types of beverages were formulated namely, Strawberry Flavored (SBF), Wood Apple Flavored (WAF)) and Non-Flavored (NF) with three brix levels (11°bx, 13°bx, and 15°bx). NF samples were made with 3%, 5%, and 7% sugar levels, whereas flavored samples were made with 2.5% sugar with fruit pulp. Each sample comprised 0.01% added salt. Three sensory tests were conducted using 30 untrained panelists. To the selected beverages, three levels (0%, 0.1%, and 0.15% w/v) of carboxymethyl cellulose (CMC) were added followed by pasteurization (TEM) at 63°C for/30 minutes and 85°C for 7 minutes which were stored at bottles and stored in refrigerated temperature 4±2 °C. Beverages were tested for physicochemical and rheological properties, nutritional composition, and microbial quality (One-month period). For the NF beverage, a significantly (p<0.05) higher sum of the rank of overall acceptability was recorded at 13°bx. Strawberry Flavored beverages resulted in a significantly higher sum of ranks for mouth feel, aroma, and overall acceptability at the 15°bx level. All sensory attributes of WAF samples changed significantly (p<0.05) with brix level, while the highest sum of rank values for all sensory attributes was at 15°bx level. The interaction of CMC concentration and TEM had a significant effect on the pH, lightness, viscosity, and sedimentation index. According to the nutritional studies, significantly higher ash, and crude fat contents resulted in the NF, while the total sugar and protein contents were significantly higher in the WAF and SBF beverages, respectively. The treatments of 0% of CMC at 85°C/ 7 min, 0.15% CMC at 63°C/30 min, and 0% CMC at 85°C/ 7 min were selected as the most suitable preservation treatments for NF, SBF, and WAF, respectively. The highest microbial quality was observed in WAF with 0% CMC at 85°C/ 7 min treatment. The beverages can be safely stored for one month under refrigerated conditions.

**Key words:** Beverage, Carboxymethyl cellulose, Defatted desiccated coconut flour, Skim coconut milk

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