

DEVELOPMENT OF A READY-TO-SERVE BEVERAGE USING CARROT (*Daucus carota* L.), BEETROOT (*Beta vulgaris* L.), AND PINEAPPLE (*Ananas comosus* L.)

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The high demand for nutritious beverages and the limited availability of ready-to-serve (RTS) vegetable and fruit mixed beverages in the local market highlights the need for an innovative product. This study aimed to develop an RTS beverage using extracted juices from carrot, beetroot, and pineapple in the ratios of 45:30:25 (V₁), 40:5:55 (V₂), and 50:10:40 (V₃). After mixing, the juices were heated up to 85°C and hot filled into the glass bottles, pasteurized at 90°C for 15 minutes and stored at ambient temperature for 60 days. The best formulation was selected through sensory evaluation and analyzed for proximate composition, fatty acid profile, energy, total sugar, vitamin C, sodium, and antioxidant contents. Additionally, pH, total soluble solids (TSS), color, total plate count (TPC), yeast and mold (YMC), and coliform contents were tested at 30-day intervals until 60 days. Sensory evaluation was also conducted to assess the acceptability of beverages for organoleptic quality at 30-day intervals. The protein, ash, fat, carbohydrate, fiber, energy, total sugar, vitamin C, and sodium contents of the developed beverage with selected V₂ formulation were, 0.4%, 0.2%, 0.2%, 8.6%, 0.01%, 0.378 kcal g⁻¹, 8.4%, 0.0147 mg g⁻¹, and 0.02 mg mL⁻¹, respectively. The antioxidant activity expressed as IC₅₀ of DPPH was 166.36±5.83 µg Trolox eq mL⁻¹ and 8.68±0.05 µg mL⁻¹. The pH and TSS values of the developed beverage were 3.84±0.06 and 8.7±0.04, respectively. L*, a* and b* values of color were changed significantly ($p<0.05$) from 40.3±0.56, 7.5±0.20, and 7.9±0.25 to 41.9±1.40, 20.5±0.89 and 19.5±2.02, respectively during storage. However, pH and TSS values did not change significantly ($p>0.05$) and TPC, YMC, and coliform contents remained at a safe level during the storage period. Hence, the beverage formulated with carrot, beetroot, and pineapple in a 40:5:55 ratio can successfully be used as a ready-to-serve drink with a shelf life of up to 60 days.

Keywords: Antioxidant, Fruit and vegetables, Organoleptic quality, Ready-to-serve beverage