

DEVELOPMENT AND QUALITY EVALUATION OF VALUE-ADDED READY-TO-SERVE AMLA (*Emblica officinalis*) BEVERAGE

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Amla is a seasonal underutilized fruit with a high nutritional profile. This study aimed to develop a ready-to-serve (RTS) beverage utilizing Amla fruit pulp, water, sugar, citric acid and carboxymethyl cellulose (CMC) as primary ingredients following the SLS standard for RTS beverages. Six formulations were prepared using different pulp concentrations (15%, 20%, 25%, 30%, 40% and 50%). The preferred formulation was selected through sensory evaluation with untrained panellists (n=30) and the selected product was packed using PET bottles. Analyses of the final product included pH, total soluble solids (TSS), titratable acidity (TA), colour values (L^* , a^* , b^*), dry matter content (DMC), vitamin C content, total polyphenol content (TPC), and ash content. Further, the shelf stability of the product was evaluated by storage under refrigerated ($4\pm1^\circ\text{C}$) and ambient ($28\pm2^\circ\text{C}$) conditions for 14 days followed by testing for pH, TSS, TA, colour value and microbial analysis. According to the results, the most preferred pulp percentage was 40% and the pH, TSS, TA, and colour values (L^* , a^* , b^*) of the best formulation were 2.4 ± 0.02 , $9.8\pm0.02\%$, $0.44\pm0.08\%$, 47.17 ± 0.8 , 1.8 ± 0.09 , 9.3 ± 0.17 respectively. The DMC, ash content, vitamin C content and TPC were reported as $4.6\pm0.07\%$, $1.4\pm0.1\%$, $0.249\pm0.03\text{ mg mL}^{-1}$ and $33.8\pm3.38\text{ mg GAE g}^{-1}$ respectively. After 14 days, no significant difference in pH, TSS, TA and colour values of the product were reported between the two storage conditions. However, a significant difference ($p<0.05$) in colour values was noted between the 7th day and 14th days. Microbial analysis indicated a total plate count less than 50 CFU mL^{-1} and the absence of yeast and mould under both refrigerated and ambient storage. In conclusion, an acceptable ready-to-serve Amla beverage was successfully developed with 14-day shelf life under ambient storage, without deteriorating physicochemical properties.

Keywords: Fruit pulp, Polyphenol content, Sensory evaluation, Vitamin C