

DEVELOPMENT AND QUALITY EVALUATION OF A PINEAPPLE JELLY BY EFFECTIVELY INACTIVATING THE BROMELAIN ENZYME

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The characteristic flavor of Sri Lankan pineapple (*Ananas comosus* (L.) Merr.) gives a unique taste to value-added products. This research aimed to develop a stable pineapple jelly by developing a protocol to inactivate bromelain enzyme activity to attain higher L-ascorbic acid retention. A 15% pineapple juice concentration was selected by a sensory evaluation (n=30; untrained panelists). Gelatin (bloom 240) was adjusted by a texture profile analysis (TPA) and viscosity was tested with commercial jelly. pH was adjusted using citric acid. Sodium metabisulfite and potassium sorbate were used as preservatives and yeast and mold (YM) and total plate (TP) counts were taken over 42 days under the storage condition of 4±1°C. A duo-trio test was conducted to compare the freshly prepared jelly with 42-day-old jelly. The pH, total soluble solids (TSS), color value, viscosity and proximate composition (moisture, ash, crude protein, crude fat, crude fiber, and total carbohydrate) were analyzed. Data were analyzed using one-way ANOVA ($p<0.05$). Fresh pineapple, containing 2188.08±25.75 ppm bromelain, exhibited complete loss of bromelain activity after being subjected to 80°C for 12 minutes while retaining a maximum ascorbic acid content of 62.02±8.61 ppm. The formulation containing 15% pineapple juice, 1.8% gelatin, and 0.15% citric acid was identified as the optimal selection. Potassium sorbate was selected as the best preservative. The YM and TP counts were within the safe level; <10² CFU g⁻¹ and <5×10³ CFU g⁻¹, respectively. The pH, TSS, viscosity and color values (L^* , a^* and b^*) were 4.47±0.022, 22.47±0.35°Bx, 43.84±3.35 Pa.s, 35.71±2.02, -1.43±0.4 and 2.81±0.94, respectively. The moisture, ash, crude protein, crude fat, crude fiber and total carbohydrate contents were 71.17±0.21%, 0.18±0.04%, 2.64±0.14%, 0.29±0.04%, 0.95±0.21% and 24.77±0.22% respectively. This pineapple jelly can be preserved for a shelf life of 35 days while maintaining its quality attributes and stability.

Keywords: Ascorbic acid, Gelatin, Preservative, Shelf life, Storage