

## Controlling Discoloration and Quality Evaluation of Dehydrated *Annona muricata* (soursop) Powder

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This study was conducted to control the discoloration and evaluate the quality of dehydrated soursop powder. Soursop is a highly nutritious, underutilized and, seasonal fruit crop grown in Sri Lanka. The dehydrated powder form of soursop is one of the ideal preservation modes since its shelf stability and versatility in the usage of many value added products. The discoloration of soursop (enzymatic browning) during the processing can be identified as the major drawback, which affects the final product quality. Ten different treatments [0.5% ascorbic acid, 0.5% citric acid, 0.25% ascorbic acid with 0.25% citric acid, 0.1% sodium metabisulfite (SMS), and control] along with blanching and without blanching were used to control the discoloration. The soursop samples were subjected to different pretreatments and were dehydrated using convective air-drying technique (55 °C for 16 hours) and finely ground to obtain the powder form. After the drying, only four treatments, out of ten, were selected owing to the minimum discoloration based on their browning indexes (BI). The best treatment and rehydration ability of soursop powder were selected via sensory evaluation conducted using a semi-trained panel. Moreover, the colour, pH, titratable acidity (TA) of all treatments were tested throughout 12 weeks storage period under ambient conditions. Subsequently, microbial count and proximate composition were determined for the best treatment. Experiments were conducted as completely randomized design with triplicates and data were analyzed using ANOVA. According to the results, “0.1% SMS without blanching” treatment gave the significantly highest ( $p < 0.05$ ) overall sensory acceptability in both dehydrated powder and its rehydrated juice. BI, pH and TA of the best treatment was recorded as  $12.79 \pm 0.27$ ,  $5.40 \pm 0.01$ , and  $1.97 \pm 0.05\%$  respectively. Moisture, crude protein, crude fat, crude fiber, ash and carbohydrate of the evaluated soursop dehydrated powder sample were  $11.90 \pm 0.13\%$ ,  $13.98 \pm 0.17\%$ ,  $6.08 \pm 0.15\%$ ,  $13.03 \pm 0.12\%$ ,  $5.91 \pm 0.24\%$  and  $49.10 \pm 0.32\%$ , respectively. Total plate count and yeast and mold count were varied from  $2.5 \times 10^2$  CFU/mL to  $7.3 \times 10^3$  CFU/mL and  $3.5 \times 10^1$  CFU/mL to  $9.8 \times 10^2$  CFU/mL during the storage period, respectively. Therefore, it can be concluded that “0.1% SMS without blanching” was the best pretreatment to control the enzymatic browning of soursop dehydrated powder with a shelf life of twelve weeks at ambient conditions.

**Keywords:** Blanching, Dehydration, Enzymatic browning, Soursop