

Determination of Total Vitamin-C Content in Concentrated Ambarella (Spondias Dulcis) and Star Fruit (Averrhoa Carambola) Juice by Evaporation and Progressive Freeze Concentration as a Comparison of the Quality of Two Concentration Methods

Mihiri Vanniarachchy*

Abstract Ambarella (*Spondias dulcis*) and Star fruit (*Averrhoa carambola*) are underutilized fruits with low in calories and rich in fiber, Vitamin C and antioxidants. The extracted juice of Ambarella and star fruit concentrated by Progressive freeze concentration (PFC) and Evaporative concentration to find out the best concentration method in terms of maintaining original quality of the juice. PFC is a novel freeze concentration technique which uses simple cylindrical apparatus which operates at -240°C temperature. The Brix value of fresh Ambarella Juice and Star fruit juice concentrated by PFC upto Brix 16.10 and 13.50 from initial Brix 7.90 and 6.40 respectively. Ambarella and Star fruit juices were rotary evaporated at $60 \pm 1^{\circ}\text{C}$ temperature and concentrated upto Brix 23.40 and Brix 18.90. Total Vitamin C content was determined by UV spectrophotometric method based on the oxidation of ascorbic acid. The total Vitamin-C content of fresh, reconstituted sample of Rotary -evaporated and PFC Ambarella juice respectively were 105.6 ± 0.22 mgL⁻¹, 86.6 ± 0.13 mgL⁻¹ and 101.2 ± 0.48 mgL⁻¹. For star-fruit juice it was 23.7 ± 0.3 mgL⁻¹, 13 ± 0.5 mgL⁻¹ and 22.9 ± 0.3 mgL⁻¹. The total vitamin loss by evaporative concentration and PFC for Ambarella juice and Star-fruit juice were 18%; 44.9 and 4.2%; 2.1% respectively. Compared with Evaporative concentration PFC is a suitable method for concentrating different fruit juices to maintain their original quality.

Keywords: Progressive freeze concentration, Evaporation, Ambarella (*Spondias dulcis*), Star fruit (*Averrhoa carambola*)

* University of Sri Jayewardenepura, Nugegoda, Sri Lanka
Email: mihiripg@gmail.com, mihiripg@sjp.ac.lk