

A Comparative Analysis of Vitamin C Content in Fresh Juices and Branded Fruit Nectars in Sri Lanka

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Abstract

Fruits are an important part of the human diet. It provides sufficient quantities of essential elements such as vitamins and minerals. Among the available vitamins, vitamin C (ascorbic acid) is one of the most important food constituents for human health due to its significant benefits. Being a tropical country, Sri Lanka is rich in a wide variety of fresh fruits that are capable of providing the recommended daily vitamin C intake. Other than that, there are a variety of ready-to-drink fruit nectar available in the market supposedly providing similar benefits. However, there is a dearth of information on the nutritional values of such locally available nectar. Therefore, the main objective of this study was to evaluate and compare the vitamin C contents present in commercial fruit nectar and fresh fruit juices. Further, the study aimed at the determination of the best possible storage temperature for vitamin C rich fruit juices. For the study, four types of commercially available fruit nectars (i.e. mango, apple, orange and wood apple [belongs to two different brands, brand 1 and brand 2]) and six types of fresh fruit juices (mango, apple, pineapple, guava, orange and passion) were selected. Among the numerous analytical techniques that are available for vitamin C determination, the official method (AOAC) for vitamin C determination in fruit juice is the 2, 6-dichloroindophenol titrimetric method. However, due to several limitations associated with this method presented herein we have used iodometric redox back titration. This method is known as a cheap and accurate method that can even be used in routine analysis. Among the studied fresh fruit juices, guava (0.1955 g/100 ml) had the highest vitamin C level followed by the orange (0.1532 g/100 ml) and passion (0.1439 g/100 ml). However, the values obtained for the fresh fruit juices were not significantly different from their commercially available counterparts from brand 1. Fruit nectars from brand 2 always had very low levels of vitamin C. However, regardless of the brand, wood apple nectar had the highest vitamin C content (0.3717–0.3227 g/100 ml). Also, it was noticed that the levels of vitamin C in the fruit nectar brand 1 were much higher than the values declared on the labels. Therefore, it is worth mentioning that the consumption of commercially available fruit nectar can also fulfil the recommended daily intake of vitamin C. Further, it was found that there is a loss of vitamin C with the increase in temperature. The vitamin C degradation was minimal at 5 °C and 10 °C but the vitamin C degradation was quite noticeable when temperature goes beyond 20 °C.

Keywords: *Vitamin C, fruit nectars, fresh fruit juice, temperature, iodometric titration*

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