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THE EFFECT OF DIFFERENT DRYING METHODS ON TOTAL ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC CONTENT AND ASCORBIC ACID CONTENT OF STAR FRUITS (*Averrhoa carambola*)

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Star fruits (*Averrhoa carambola*), is a tropical fruit rich in natural antioxidants. Scientific evidence suggests that antioxidants including polyphenols and ascorbic acid reduce the risk of chronic diseases such as cancer and heart diseases. However, fresh fruits are highly perishable and hence their preservation is essential. Drying is widely used as an economical food preservation method, though it is evident that the composition of antioxidants and antioxidant activity of the fruits are affected by drying. This study was carried out to evaluate the effect of dehydration, oven drying and sun drying on antioxidant activity, total phenolic content and ascorbic acid content of two varieties of star fruits, namely Honeysweet and Arkin. The fruits analyzed belonged to the colour index group 2 where the whole fruit is pale green in colour. The antioxidant activity, total phenolic content and ascorbic acid content were determined using DPPH radical scavenging method, Folin-Ciocalteu method and DCP dye method respectively. The antioxidant activity and the total phenolic content were measured in terms of Ascorbic Acid Equivalent (AAE), and Gallic Acid Equivalent (GAE) respectively. The experiment was designed as a completely randomized block design (CRD) with three replicates.

Amongst, the evaluated treatments, in variety Honeysweet the antioxidant activity of the dehydrated sample showed a significantly ($P<0.05$) higher value. The ascorbic acid content was also significantly ($P<0.05$) higher in the dehydrated sample. However, the total phenolic content in dehydrated and oven dried sample were significantly ($P<0.05$) higher.

In variety Arkin the total antioxidant activity of the dehydrated sample was significantly ($P<0.05$) higher than in other treatments. The ascorbic acid content in the dehydrated sample was significantly ($P<0.05$) higher. The total phenolic content was significantly ($P<0.05$) higher in oven dried fruits.

The antioxidant activity and ascorbic acid content did not significantly ($P<0.05$) vary among the two varieties in its fresh or dehydrated forms. However, oven dried Honeysweet contained significantly ($P<0.05$) high antioxidant activity and ascorbic acid content compared to Arkin. Besides, a significantly ($P<0.05$) higher amount of ascorbic acid and total phenolic content were observed in sun dried Honeysweet than Arkin. Variety Arkin showed significantly ($P<0.05$) higher antioxidant activity in sun drying and significantly ($P<0.05$) higher total phenolic content in dehydrated and oven dried fruits. Furthermore, the results clearly indicated that dehydration is the best among the evaluated drying methods in preservation of antioxidant activity, total phenolic content and ascorbic acid content in star fruits.