

## Value Addition in Dragon Fruit (*Hylocereus undatus*)

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### SUMMARY

Dragon fruit contains more than 80 % water which is the major reason behind its poor shelf life. Improper post-harvest handling, lack of quick transportation and storage facilities leads to great economical loss. Due to all these reasons value addition or processing in dragon fruit is fetching more attention now a day. There is a vast scope and opportunities in processing of dragon fruit, due its nutritional qualities and increasing demands. The value added products prepared from dragon fruit are nutritious. Hence, these products considered as complete food.

### INTRODUCTION

Dragon fruit is familiar to world by different names such as *pitaya* or *strawberry pear*. It is a semi epiphytic vine and climbing cacti belonging to *cactaceae* family (Rao and Sasanka, 2015). It is originated from tropical and subtropical forest of Mexico and the United States (Crane and Balerdi, 2005). Although Vietnam is the leading producer of this crop, the cultivation of this fruit crop is increasing day by day in different countries like Thailand, Malaysia, Philippines, Sri-Lanka China, Israel, America, Mexico and Australia (Waghmare *et al.* 2021). Botanically it is berry fruit comes under non-climacteric class (Liaotrakoon, 2013). There are three major types of dragon fruit have been reported based on their pulp colour *viz.*, reddish, pink and yellow. Harvesting maturity of dragon fruit judged by its skin colour and firmness. The peel of mature fruit can be easily removed from the fruit. The fruit pulp varies in colour from white to reddish white. The fruit contains small black seeds similar to kiwi fruit. The taste of this fruit is also very sweet. It rouses as a good option to the marginal farmers under arid and rain fed areas throughout the country. It gives higher returns than that of conventional fruit crops (Babar *et al.* 2021). Dragon fruit is highly perishable in nature as it contains more than 80% of moisture; it needs more attention from cultivation, harvesting, handling, storage, processing, and transportation till market distribution. Though it is preferred for fresh consumption, some value addition practices are needed to avoid post-harvest losses. As per this context, postharvest research and development efforts must be intensified to bolster the industry. From the viewpoint of processing, dragon fruit has been utilized for the preparation of products like juice, jam, jelly, powder, wine, *etc.* The inadequacy of storage facility and transportation leads to huge economical loss; hence to avoid this value addition can be practiced.

### Characteristics of Dragon Fruit

This fruit has a creamy texture and distinctive aroma. Perfectly ripe fruit can be categorised by easy separation of peel from pulp. Pulp of ripe fruit consists of 85-90% of moisture It is low in calories. The seeds taste slightly like peanut butter. This fruit is rich in water, minerals and nutrients. Pink-tailed fruit is in high demand, but other white-tailed deer have a special fan base. These fruits are in great demand in fresh form. Similarly, there is scope for the production of value-added products. The fruit can be used to make fruit bars, ice cream, jellies, marmalades, juices, pastries, gars and sweet yogurt. Agriculture of this crop can be included in agri-tourism. The attraction of the new crop will definitely connect urban people and consumers. Healthy properties are in great demand in local and international markets. As this fruit is relatively new in India, there is a need to consider consumer demand and other factors. Indian fruits are said to be sweeter than imported fruits. The addition of processed ingredients may be helpful.

### Value Added Products:

**Pulp or salad:** The freshly harvested fruits are used for extraction of pulp or salad. Remove the peel from the fruit and separate the pulp with help of spoon. The extracted pulp or salad can be selling in market having price 200-250 per kg.

**Fruit juice:** Fully ripened fruits should be washed thoroughly. Peel a squash, grate it and squeeze the seeds and mix well with a blending machine. This juice can be used for a long time if frozen.

**Jam:** It is concentrated product which consists of higher amount of fruit pulp. The contains are fruit pulp 28%, water 16.5%, white sugar 50%, Citric acid 0.5%, synthetic acid 0.05 (preservative)

**Jelly:** Preparation of one kg jelly, take 450 grams of distilled dragon fruit juice. Add 550 g sugar and 5 g citric acid. Different formulations can be prepared by mixing 5, 10 and 15 grams of pectin in it. For this, in a stainless steel pot, take pectin in the same amount of sugar and mix well. Mix the remaining sugar in the dried fruit juice. Give it heat and add sugar to this solution till TSS 55<sup>0</sup>Brix. Then add pectin and sugar mixture. Generally continue heating till TSS 58 Bricks arrives. At this time add citric acid. After TSS 67<sup>0</sup>Brix of jelly, KMS should be added. Fill the mixture into a sterilized glass bottle. Cover and airtight with paraffin. Properly stored, various storage studies have shown no change in the color, taste, texture, TSS and pH criteria of this jelly in four months.

**Dragon Fruit Powder:** The fruits washed thoroughly and peel was removed off. Then fruits cut in to pieces as thin as size ranges from 0.25-0.30 mm and maintain the semi-circular shape with diameter 10 mm. The slices kept on aluminium foil for drying in oven at temperature 70<sup>0</sup>C. After 48 hrs the slice were dried, it became crisp then blended in kitchen blender. Coarse powder sieved with the stainless steel sieve shaker having pore size 300 µm. Prepared final product in the form of powder was stored in cool and dry place (Yusof *et al.* 2012).

**Dragon Fruit Wine:** Now a days researchers working on preparation of wine from dragon fruit (Gong *et al.* 2017). The prepared wine was low alcohol health wine.

**Puree:** Drain fruit puree is reddish purple in colour. It has a sugar content of 12.6<sup>0</sup>Brix. Drain fruit juice is usually a transparent red colour. It should be packed in sterilized bottles and pouch. The storage period of vertical packing pouch can be 12 months, while the storage period of packing in glass bottles can be 5 months.



**Free Dried Powder**



**Dragon Fruit Jam**



**Dragon Fruit Jelly**



**Dragon Fruit Juice**

Source: Wakchaure et al. 2020

### Health Benefits

It is source of vitamin, mineral, protein, fibre and antioxidants. The vitamins are C and B complex which helps in many skin and digestive diseases. High levels of calcium, phosphorous and magnesium are beneficial for bone and dental health. It contains carotene and the omega 3 fatty acids in the seeds are good for the eyes. It is Useful in lowering cholesterol, stomach upset, lowering blood sugar. The regular consume of fruit very useful

against cough and asthma; healing wounds and cuts due rich source of vitamin C (Perween *et al.* 2018). It is used as juice and salad in restaurant (Luders, and Mc Mahon, G., 2006).

## CONCLUSION

Dragon fruit is an emerging fruit crop in countries like India and the area of production is increasing nowadays. Although, at present the availability of fresh fruit is very seasonal and localized but the potential for domestic and international marketing is very high. At present, derived processed products of dragon fruit rarely appear in the market and more research is required to improve their trading opportunities.

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