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Study about physico-morphological characters of dragon fruits

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Abstract

The current investigatory work entitled "Study about Physico-morphological characters of dragon fruits" was executed at Pomology Laboratory, Department of Pomology, Pt K.L.S. CHRS, Pendri, Rajnandgaon, IGKV, Raipur, Chhattisgarh during year 2019-2020. To assess the physico morphological characteristics of Dragon fruit, Ten evenly matured Dragon fruit were grasped casually from one and all replication. Data revealed that the mean weight of fruit is 434.10 g, mean weight of pulp is 310.21 g, mean weight of peel is 104.79 g, pulp to peel ratio is 2.95, edible index is 71.97, inedible index is 27.93 and the length and diameter of fruit is 11.3 cm and 6.6 cm respectively. And the color and shape of fruit is red and oval respectively. Similar result related to physico-morphological traits of dragon fruit was recorded by Sharma (2016) for this fruit.

Keywords: Dragon fruit (*Hylocereus costaricensis*), physico-morphological, mean weight, pulp weight, peel weight, edible index, length, diameter, color, shape, traits

1. Introduction

Dragon fruit (*Hylocereus* spp.) is a sweltering climate bearer climbing cactus. The genus *Hylocereus* belongs to Cactaceae family, which is a dicotyledonous flowering plant family, under Caryophyllales order. In Latin America it is also known belle of the night and condrella plant. The weight of fruit is 150-1200 g and varies in size and shape of the fruit, as well as the colour of pulps i.e. red (*H. polyrhizus*) or white (*H. undatus*). Dragon fruit mean weight is around 350 g. It has luscious pulp carrying plenty of tiny black seeds. It is also known for its rich antioxidant and micronutrient property. It contains antioxidant such as flavanoids, phenolic acid and betacyanin and naturally fat free and high fibre. These is a low acid food and Its pH values ranges between 4.4 and 5.1 out of which malic acid forms major portion. (Nomura *et al.*, 2005) [3]. Biochemical estimation of fruit showed that the 100 gm fruit has moisture content of about 83-88%, titratable acidity between 0.20 to 0.30 mg lactic acid equivalents, total soluble solids (TSS) between 8-12°Brix.

It is very attractive due to its unique and eye catching appearance. It derived its origin from the tropical and subtropical regions of Latin Americas, including North, Central and South America (Crane and Balerdi 2005; Luders and McMahon, 2006) [1, 2]. This is grouped among as non- apocalyptic Fruit. Dragon fruit is pool of enomourous nutrients. It basically contains various nutrients in significant amount such as K, P, Na, Ca and Mg whereas vitamins such as ascorbic acid (33 mg/100 g) and niacin (0.2-2.8 mg/100 g) at high quantity while small quantity of thiamine, riboflavin and retinol are also available in it (< 0.05 mg/100 g) (Stintzing *et al.*, 2003; To *et al.*, 1999) [5, 8]. In 100 gram of fruit it contains 60 gm calories, 1.2 gm protein, 0 gm fat 13 gm carbs, 3 gm fibre, 3% of the RDI ascorbic acid, 4% of the RDI Fe, 10% of the RDI Mg. Fruit seeds composed of tocopherol and fatty acids (Tarpila *et al.*, 2005) [7].

This fruit is new to Chhattisgarh and is cultivated in some parts of Raigarh district (Kotra, Kharsia) Raipur, Rajnandgaon and Durg district. And there are rare work done in dragon fruit in India especially in processing. As hot climate and low rainfall is suitable for its cultivation so its area and production will increase in Chhattisgarh in future so there is need to standardize the recipe for preparation of useful products from it such as jam, jelly and beverages.

2. Materials and Method

The recent research on Study about Physico-morphological characters of dragon fruits was conducted during 2019-20 in the laboratory of Department of fruit science, Pt K.L.S College of Horticulture and Research Station Rajnandgaon (C.G).

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It is located at 21.10°N latitude, and 81.03°E longitude and at an altitude of 307 m MSL under Chhattisgarh plains. It has tropical and dry spell throughout the year, However the temperature observed is 10 °C during winter and in summer reaches the 48 °C. This place bears hot windy climate during summer and precipitation annually of 1250 mm out of which approximately 85% is precipitated from third week of June to mid of September and remaining precipitate in month of October to February. May month has maximum temperature while December month has minimum temperature. The basic material used in this present research are firm, well developed and uniform ripened dragon fruit of *Hylocerus costaricensis* species which were obtained from farm of Chawda Bagh, Nandanvan Road, Raipur. Various equipments needed for physico-morphological characterization of dragon fruit such as vernier caliper, weighing machine etc are provided by Fruit Science Processing laboratory, Pt. K.L.S College of Horticulture and Research Station Rajnandgaon C.G. And equipment and instruments required for analysis of product are provided by Soil Science laboratory, S.K.S College of Agriculture and Research Station, Rajnandgaon C.G.

Physical and morphological character of ten evenly ripened fruit, randomly chosen from each replication were examined after harvesting. Total of 30 fruits were chosen to note observation on subsequent features. The colour and shape of fruit are observed visually. Randomly ten fruits from each replication are selected and weighted in electronic balance. The average weight of ten fruits are calculated and noted, then they were measured individually for length by measuring tape and girth by using Vernier calliper at the middle of die fruit. The average length and girth were expressed in centimeters. They are separately peeled and seprated from pulp and peel is weighted in electronic weighing machine The pulp and peel are separately weighted in electronic machine. And there pulp to peel ratio calculated. Waste index/inedible index, edible index /pulp % are calculated by following formula:-

$$\text{Waste Index} = \frac{\text{Weight of fruit}-\text{Wight of Pulp}}{\text{Weight of fruit}} \times 100$$

$$\text{Pulp \%} = \frac{\text{Wight of Pulp}}{\text{Weight of fruit}} \times 100$$

4. Result and Discussion

Data associated with physico- morphological composition of dragon fruit is set forth in Table 1 Data revealed that the mean weight of fruit is 434.10 g, mean weight of pulp is 310.21 g, mean weight of peel is 104.79 g, pulp to peel ratio is 2.95, edible index is 71.97, inedible index is 27.93 and the length and diameter of fruit is 11.3 cm and 6.6 cm respectively. And the color and shape of fruit is red and oval respectively. Similar result related to physico-morphological traits of dragon fruit was recorded by Sharma (2016) [6] for this fruit

5. Conclusion

The Result shows that fruit has average weight of 434.10 g, average pulp weight is 310.21 g, average peel weight is 104.79 g, pulp to peel ratio is 2.95, edible index is 71.97, inedible index is 27.93 and the length and girth of fruit is 11.3 cm and 6.6 cm respectively. And the fruit's color and shape are red and oval respectively.

Table 1: Physico-morphological properties of dragon fruits

S. No	Characters	Value
Physical Properties		<i>Hylocerus undatus</i>
1	Colour of fruit	Red skin red pulp
2	Shape of fruit	oval
3	Weight of fruit	434.10 g
4	Length of fruit	11.3 cm
5	Diameter of fruit	6.6 cm
6	Weight of pulp	310.21 g
7	Weight of peel	104.79 g
8	Pulp to peel ratio	2.95
9	Edible index	71.97
10	Inedible index	27.93

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