

A Review on *Hylocereus Undatus*

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Submitted: 01-06-2023

Accepted: 10-06-2023

ABSTRACT:

The dragon Fruit is a relatively new super fruit on the indian market dragon. They contain the substance that provide nourishment essential for the maintenance of life and for a growth .Dragon fruit is a medicinal plant belonging to the cactaceae family. The distinctive morphology found in dragon fruit is the shape of the skin which corresponds to the oval body shape.Extracts from stems , flowers ,peels , pulps of dragon fruit own a range of beneficial biological activities against pathogenic microbes including bacteria, fungi and viruses and diseases like diabetes ,obesity ,hyperlipidaemia and cancer . Vietnam is a tropical country with favourable climate conditions for the development of pitaya plantations ,which have great adaptability in tolerance to a wide range environmental condition . This review summarizes the phytochemicals which are present in *HylocereusUndatus* are :proteins ,steroids ,carbohydrates, alkaloids ,Phenolic compounds , Tannins , Flavonoids and Saponins and Pharmacological aspects of dragon fruit are :Antioxidant activity ,Anti-cancer activity, Anti-microbial activity, Cardioprotective activity , Pre-biotic activity.

Keywords:

HylocereusUndatus, Dragon Fruit, Phytochemicals, Pharmacological activity, Cultivation, Botanical Classification.

I. INTRODUCTION:

The dragon fruit , a newly introduce super fruit in india is seen as a promising and profitable fruit crop . It is native fruit originating from mexico and central and South America .Their are 3 types of dragon fruit : *Hylocereusundatus* , pink skin with white flesh ,*Hylocereuspolyrhizus* , red flesh with pink skin :*Hylocereuscostaricensis* ,violet red flesh with pink skin and *Hylocereus (Selenicereus) megalanthus*, white flesh with yellow skin ,fruit has a very appealing colour and mellow mouth melting pulp with black colour edible seed embedded in the pulp . It is long - day plant with a lovely night – blooming flower known as “Noble Woman”or “Queen of the night”.It is cultivated in at least 22

countries of the tropics ,such as ,Australia, Cambodia , China, Israel, Japan, Nicaragua, peru, Philippiness, Spain ,Srilanka, Taiwan, Thailand , South Western USA and Vietnam, etc .(mizarhi and Nerd- 1999,Novel and Barrera,2002).

The fresh fruit contain 82.5-83.0% moisture, 0.16-0.23% protein , 0.21-0.61% fat , 0.7-0.9% fiber.Hundred gram fresh fruit pulp contain 6.3-8.8mg calcium, 3



0.2-36.1 mg phosphorous ,0.5-0.61mg iron and 8-9 mg vitamin C

Cultivation:

1]Soil and Climate:

This fruit can be grown on wide range of solid from sandy loam to clay loam .However ,sandy soils withgood organic matter and internal drainage are best for its cultivation .Soil PH of 5.52 to 7 is best for dragon fruit cultivation. They prefer temperature between 65 and80 degree F. Dragon fruit is a cactus and temperatures under 32Fwill injure it over time .

2]Land Preparation:

Land should be ploughed till soil achieves the fine tilth and weed free .As part of land/field preparation apply any organic compost in proportionate ratio.

3)Propagation:

The most common propagation method in dragon fruit is by cutting. An about 20cm length cuttings should be used for planting in the .Pile up these cutting two days before the potting .However,it can also be propagated by seeds but it is not suitable for commercialcultivation.

4)Planting:

To get the proper up right growth and development of the plant,these should be supported by concrete or wooden columns as the plant becomes mature it forms aerial roots from the branches hence it is recommended to have round/circular metal frame to maintain the balanced dragon shrub with a spacing of 8*8 ft.

5)Irrigation:

These plants requires less water compared to otherplants.However ,at the time of planting ,flowering,fruit,development stage and hot dry climate conditions,frequent irrigation are required .

6)Pest:

There are no pests and diseases found or reported in dragon fruit cultivation.

7)Marketing:

Dragon fruit is having a huge demand in india as well and one can earn a good profit through dragon Fruit grade based on size:

Grade	Fruit wt/Size
Extra Large	>500g
Large	>380-500g
Regular	>300-380g
Medium	260-300g
Small	>260g

fruit as the benefit of this fruit is also very good for healthy living.

8)Caution:

The land should be free from weed .Proper drainage system.

9)Harvesting and Yield :

It is harvested when its skin colour changes from bright green to red or pink.The better harvesting time for dragon fruits is 3-4 days after fruit change its skin colour .An approximate yield of 20 kg is obtained.

Botanical Classification:

Domain:Eukaryota
 Kingdom:Plantae(Haeckel1866)
 Subkingdom:Tracheobionta
 Superdivision:Spermatophyta(seed plants)
 Division:Magnoliophyta
 Class:Magnoliopsida
 Subclass:Caryophyllidae
 Order:Caryophyllales
 Family:Cactaceae
 Subfamily:Cereoideae
 Tribe:Hylocereae
 Genus:Hylocereus

Pharmacological Activity:

1]Antioxidant Activity:

Ethanol extract of the *H. undatus* peel and flesh were proposed to have different antioxidant capacities because peel contain more flavonoids than flesh.

2]Anti-cancer Activity:

The anticancer properties of *HylocereusUndatus* was recently studied. Several evidences showed that polyphenols, flavonoids and betanins that present in the *hylocereusundatus* are responsible for the anticancer effects *H. undatus* peel extracted by ethanol-water (50:50v/v) solvent system showed anti-proliferative activity.

3]Antimicrobial Activity:

The antimicrobial activity of ethanol, chloroform and hexane extracts from *H. Undatus* peel was studied. From the disc diffusion assay results, exhibited inhibition zone of about 7 to 9mm against Gram positive and gram-negative bacteria.

4]Hypocholesterolemic :

Polyphenol contents in *H. polyrhizus* flesh were proven to be able to reduce cholesterol level in the body.

5]Cardio-Protective Effect :

Polyphenol contents in *H. Polyrhizus* flesh also possessed anti-thrombotic effects which further enhanced its cardioprotective properties.

6]Prebiotic Effect:

The ethanolic extract of *H. undatus* flesh was detected as approximately 85% of mixed oligosaccharides. These oligosaccharides had higher resistance towards the human salivary α -amylase compared to inulin.

Preparation of dragon fruits peel samples:-

The Fresh dragon Fruits (*H. polyrhizus* and *H. Undatus*) were obtained from REFMAD farms, Burgos, Ilocos Norte. First, peels from the two varieties were manually separated from the flesh. Then, the % recovery of the peels was computed using the following equation:-

$$\% \text{ Recovery of the peels} = \frac{\text{weight of peels} \times 100}{\text{Weight of dragon fruit}}$$

The dragon fruits peels were then dried using a cabinet drier set at 55°C for 11 Hours or until the desired water (aw) was achieved. Next the

peels were ground using a blender and then the powdered samples were weighed and placed in separate sealed containers and stored in the refrigerator until further use.

Benefit of Dragon Fruit:

- 1]High in Nutrients
- 2]May help fight chronic disease
- 3]Loaded with fiber
- 4] Promotes a healthy gut
- 5]Strengthen your immune system
- 6]May boost low iron levels
- 7]Good sources of magnesium
- 8]Its naturally fat-free and high in fiber
- 9]It contains prebiotics
- 10]It is rich in antioxidants like Flavonoids, phenolic acid and betacyanin.
- 11]It's rich in antioxidants like Flavonoids, phenolic acid, and betacyanin. These natural substances protect your cells from damage by free radicals-molecules that can lead to disease like cancer and premature aging.
- 12]It's naturally fat-free and high in fiber. It makes for good snack because it can help keep you full for longer between meals.
- 13]It may help lower your blood sugar. Researchers say this might be partly because it replaces damaged cells in your pancreas that make insulin, the hormone that helps your body break down sugar. But the studies were done on mice, not people. It's unclear just how much dragon fruit you'd have to eat to get these benefits.
- 14]It contains prebiotics, which are foods that feed the healthy bacteria called prebiotics in your gut. Having more prebiotics in your system can improve the balance of good to bad bacteria in your intestine. Specifically, dragon fruit encourages the growth of the probiotics lactobacilli and bifidobacteria. In your gut, these and other helpful bacteria can kill disease-causing viruses and bacteria. They also help digest food.
- 15]It can strengthen your immune system. Dragon fruit is high in vitamin C and other antioxidants, which are good for your immune system.
- 16]It can boost your iron levels. Iron is important for moving oxygen through your body and giving you energy and dragon fruit has iron.

Side Effects of dragon fruit :

1]Constipation :

If we eat too much dragon fruit we may have adverse effects, even if it contains fiber. They are good for our digestive health and do many other good things for us. If a person eats too much fiber, it

can cause a lot of health problems. Your stomach and intestine fill up with gas, so you don't get the nutrients you need. There is also a lot of stomach pain and a lot of flatulence.

2] Reddish-Brown pee:

Depending on how much red dragon fruit you eat, your urine may turn pink or red. These symptoms seem more worrying than they really are.

3] Excessive use of antioxidants can be dangerous:

Vitamin C and other antioxidants, like phytonutrients, polyphenols, and carotenoids, are in dragon fruit. Which also has a lot of these other antioxidants. All this has different health benefits. People who eat a lot of dragon fruit can get too many antioxidants which can cause lung cancer. Vitamin E raises the risk of a hemorrhagic stroke.

4] Allergy:

Dragon fruit is a great source of vitamins, minerals, antioxidants, phytonutrients, polyphenols, and dietary fiber, making it very healthy. Adding dragon fruit to your diet provides health and beauty benefits.

II. CONCLUSION :

1] This review paper aims to introduce the production of dragon fruit in new areas considering the food and economic values.

2] Due to its nutritional and medical properties, the dragon fruit brings numerous benefits to human health, mostly for the control and management of oxidative stress.

3] All the different parts of pitaya (i.e. stems, flowers, peels, and pulps) contain bioactive compounds involved in a wide range of beneficial biological activities including, antioxidant, antimicrobial, anticancer capacities.

These include betalains, flavonoids, polyphenols, terpenoids, and steroids, saponins, alkaloids, tannins, and carotenoids which have been proven as effective, healthier, safer, and sustainable alternatives to synthetic drugs for the treatment and prevention of many diseases, such as diabetes, cancer, obesity, hyperlipidaemia, and pathogenic agents such as viruses, bacteria, and fungi. Besides the pharmaceutical value of its compounds.

4] It is also a natural source of colorants with potential uses in food and cosmetic industries.

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