Review Article

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A REVIEW ON PLANT PROFILE AND PHARMACOLOGICAL ACTIVITIES OF *HYLOCEREUS UNDATUS* FRUIT

Purilla Salomi, Sabella Venkata Prasanna *, Rayadurgam Naveen, Durgesam Ramya, Challa Haritha
Department of Pharmacology, Chalapathi Institute of Pharmaceutical Sciences, Guntur, India

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*Corresponding author
E-mail: prasanna3264@gmail.com

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ABSTRACT

The dragon fruit is a relatively new super fruit on the Indian market. Because of its appealing fruit colour and mouth-watering pulp with edible black seed imbedded within the pulp, nutraceutical value, excellent export potential, and highly remunerative in nature, it is gaining tremendous popularity among growers. It produces yield from 14-16 months after stem cutting and yield up to 20 years. This review summarizes the phytochemicals which are present in *Hylocereus undatus* are: Proteins, Steroids, Carbohydrates, alkaloids, Phenolic Compounds, Tannins, Flavonoid's and Saponins, and pharmacological aspects of dragon fruit (*Hylocereus undatus*) are: Antioxidant Activity, Anti-Cancer Activity, Anti- Microbial Activity, Cardio Protective Activity, Pre-biotic Activity.

Keywords: *Hylocereus undatus,* remunerative, nutraceutical value, Dragon Fruit, Phytochemicals, Pharmacological Actions.

INTRODUCTION

The dragon fruit, a newly introduced super fruit in India, is seen as a promising and profitable fruit crop. Fruit has a very appealing colour and mellow mouth melting pulp with black colour edible seed embedded in the pulp, as well as tremendous nutritive properties, which attracts growers from all over India to cultivate this fruit crop that originated in Mexico and Central and South America. It is a long-day plant with a lovely night-blooming flower known as "Noble Woman" or "Queen of the Night." Strawberry Pear, Dragon Seed, Pithaya, Night Blooming Cereus, Belle of the Night, Cinderella Vine, and Jesus in the Cradle are some of the other names for the fruit.[1]Plants contain a broad range of organic molecules that do not directly contribute to the plant's growth and development. Secondary metabolites are the name for these molecules. Food additives, flavourings, pharmaceuticals, and other synthetic products have all been derived from secondary metabolites from plants.[2]

Propagation

Cuttings of the *H. undatus* are most commonly obtained by severing foot-long lateral branches at a stem segment. Making a slant cut on the end of the stem that will be inserted to improve rooting in the soil Cutting should be cured for a minimum of 24 hours. Before planting, keep it in a cool, dry place for 5-7 days. Cutting mature stems is preferable because they are more resistant to insect and snail damage. Cuttings can be planted directly in the ground. Use a well-drained potting medium in the field or in pots.[3]

Cultivation

Plantings at a high density of between 1100 and 1350 plants per hectare can be done commercially. It can take up to five years for a plant to reach full commercial production capacity. When can yields of 20 to 30 tonnes per hectare be expected, Hylocereus has custom-made to measure in dry conditions, as expected; 7 Tropical climates with a reasonable amount of rainfall, After flowering, the dragon fruit sets on the cactus-like trees 30–50 days later, with 5–6 harvest cycles possible every year It is free to cultivate in various regions, It has become a weed and is classified as a cuckoo invasive weed in the United States.[4]

Common / vernacular name

Chinese huǒlóngguǒ (fire dragon fruit), French Cierge-lézard, Pithaya rouge, Pitaya, Mexico Junco, Flor de caliz, Pitajava, Pitahaya roja, English Strawberry Pear, Dragon fruit, Red pitaya, Night Blooming Cereus, Belle of the Night, Cinderella Plant, Queen of the Night, Jesusin the Cradle, German Distelbirne, Echtestachelbrin, SpanishFlor de caliz, Junco tapatio, Pitahaya orejona, Pitajaya, Reina de la noche, Hindi Dragon Fruit.[5]

Taxonomical Position

Table 1: Taxonomical classification of dragon fruit

Kingdom	*Plantae*
Order	*Caryophyllales*
Family	*Cactaceae*
Subfamily	*Cactoideae*
Tribe	*Hylocereae*
Genus	*Hylocereus*
Species	*H. undatus*[5]

Nutritional and Pharmacological aspects of Dragon fruit

The pitaya fruit, which has a lot of potential in Brazilian cuisine because of its sweet taste, can be used in jams, juices, ice cream, and candy, or it can be eaten plain in the wild. The pitaya fruit, which has become popular due to its sweet flavour, with a lot of potential for use in Brazilian cuisine, Jams, juices, ice cream and candy can all be made with it, or it can simply be eaten, in its natural state investigated the wound-healing properties of aqueous extracts from *H. undatus* leaves, shells, fruit pulp, and flowers, and found promising results. All parts of the fruit have healing effects on mice. Healing takes longer in diabetic animals, and topical applications of *H. undatus* resulted in significant increases in hydroxyproline, tensile strength, total protein, and phospholipids. Improved epithelialization and DNA collagen content as a result, healing is made easier. However, in this study, the H. hypoglycaemic activity was not observed by the authors. *undatus* is the Latin word for "without." investigated the antiproliferative activity of red pitaya in melanoma cells to see if the fruit could be used to treat the cancer. It is thought to be a promising anticancer agent.[6]

Phytochemicals present in Dragon fruit (*Hylocereus undatus*)

Table 2: Phytochemicals present in Dragon fruit

Components	Reagent	Note	Results of fruit extract tests
Proteins	Biuret test	Purple blue	Positive
Steroids	Liebermann Burchard test	Yellow ppt	positive
Carbohydrates	Molisch test Benedict test	Violet ring Orange ppt	positive
Alkaloids	Mayer's reagent Wagner's reagent	White ppt Brown ppt	positive
Phenolic compounds	Ferric chloride test	Green ppt	Positive
Tannins and Flavonoids	Lead acetate	Yellow white ppt	Positive
Saponins	Fast stirring	Dense foam for long time	Positive[7]

Note

Vitamin B1, vitamin B2, vitamin B3, and vitamin C, as well as protein, fat, carbohydrate, crude fibre, and other nutrients and minerals, are abundant in *Hylocereus undatus.* Thiamine, niacin, pyridoxine, cobalamin, glucose, flavonoid betacyanin's, polyphenol, carotene, phosphorus, phenolic Phyto albumin and iron.[8]

Pharmacological actions of Dragon fruit (*Hylocereus undatus*)

Antioxidant activity

Because the peel contains more flavonoids than the flesh, ethanolic extracts of the *H. undatus* peel and flesh were proposed to have different antioxidant capacities.[9]

Anti-cancer activity

Hylocereus undatus has recently been studied for its anticancer properties. Several studies have shown that polyphenols, flavonoids, and betanin's found in *Hylocereus undatus* are responsible for anticancer properties. *H. undatus* peel extracted with ethanol-water (50:50w\v) The anti-proliferative activity of the solvent system was demonstrated.[10]

Antimicrobial activity

The antibacterial activity of *H. undatus* peel extracts in ethanol, chloroform, and hexane were investigated. According to the results of the disc diffusion assay, there was an inhibition region of 7–9 mm against Gram-positive and Gram-negative bacteria bacilli.[3]

Hypocholesterolaemia Effect

Polyphenols found in the flesh of *H. polyrhizus* have been shown to lower cholesterol levels in the body.[11]

Cardio-protective Effect

Polyphenol contents in *H. polyrhizus* flesh also possessed anti-thrombotic effects which further enhanced its cardioprotective properties.[11]

Cardio-protective Effect

Polyphenols in *H. polyrhizus* flesh also had anti-thrombotic properties, enhancing its cardioprotective properties even more.[12]

Prebiotic Effect

Approximately 85 percent of mixed oligosaccharides were found in the ethanolic extract of *H. undatus* flesh. These oligosaccharides were more resistant to human infection. Compared to inulin, salivary - amylase This hasn't been digested. However, they serve as prebiotics in the stomach, which helps with digestion. Lactobacilli and bifidobacterial, which are beneficial bacteria, are growing. These microorganisms will aid digestion and maintain a healthy immune system.[13]

CONCLUSION

According to the above article, dragon fruit tend to have numerous commercial selling points: they are attractive in shape and colour, and they have excellent nutraceutical properties, which attract growers from all over India. They grow fruits quickly in general, and few diseases and pests are currently encountered. It was discovered that the fruit contains a high number of phytochemicals, which have a variety of functions such as anti-cancer, anti-microbial, antioxidant, and anti-inflammatory properties. This fruit crop needs study in a variety of areas.

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