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Review Article

Unfolding The Potential of Dragon Fruit

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ABSTRACT

This review is planned to bandy the civilization technology, nutritive values and health benefits of Dragon fruit. Dragon fruit factory has wide rigidity and grown well in slightly heavy texture soils. shops are generally propagated by stem slices. Flower kids are arising after 18 months of planting and needed 28- 30 days for blooming. This fruit is popular due to its nutritive value, which is a good source of minerals, glucose, fructose, salutary fiber and vitamins. It strengthens the vulnerable system of the mortal body and is also used in the treatment of diabetes, heart conditions and in maintaining healthy body weight. The yield and nutritive value of Dragon fruit vary depending on the species, civilization practices, growing area and harvesting time. Dragon fruit peel has a high eventuality to be used as a natural color. figures of marketable farmers are gradationally adding in different countries due to getting a economic price of their product in the requests. At present, little information is available on product aspects of Dragon fruit. exploration on different aspects of civilization and health benefits of this fruit can help to maximize the benefits to worldwide farmers and consumers and to expand the request of Dragon fruit.[1].

INTRODUCTION

It's known as " Thanh Long "(Green Dragon), having epidermis green foliaceous bracts or scales of a dragon. Several Hylocereus and Selenicereus species, popularly known as strawberry pears, give medium to large- sized fruit that the original community has long consumed. One of the tropical fruits belonging to the cactus family, Cactaceae is the dragon fruit or pitaya. Three major species of dragon fruit, particularly Hylocereus undatus (white meat with pink skin), Hylocereus polyrhizus(red meat with pink skin), and Selenicereus megalanthus(white meat with unheroic skin), are available for marketable civilization. Because of the white meat, Hylocereus undatus is frequently known as white pitaya. Hylocerereus undatus was first observed in southern Mexico, and has ago moved to northern Australia, Taiwan, Malaysia, and other Asian nations. Pitaya raw meat is delicious, and has little

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black seeds that are scattered throughout the white meat. The most common system of propagating H. undatus is by slices, which are generated by detaching bottom- long side branches at a stem member. Fruits are a rich source of vital vitamins and minerals, , vitamin E, vitamin C, lycopene, phosphorus, and calcium. Adipose acids are significantly important in assiduity and heartiness. Dragon fruits are popular, affordable, and have a large request demand as a result. thus, they're honored as the fruit of the future. Dragon fruit civilization and preface in India are recent developments, and dragon fruit is still now being espoused in different regions.[2]

Different Types Of Dragon Fruit

Due to the dragon fruit's low water and tillage demands, growers in Karnataka and Maharashtra are presently studying further about how to cultivate it. As an outgrowth, the area under civilization will probably grow in the unborn. High situations of polysaccharides in the stem of Hylocereus undatus bind to the DNA, making it thick and tenacious during the rush step during birth. It has been established that this species uses water effectively. Dragon fruit shops produce hermaphroditic flowers, still, it's pivotal that they're slept during blossoming, which generally occurs at night. Some cultivars are inharmonious with one another. Conventional derivatization styles were preliminarily used for the medication of response results as a element of amino acid analysis. quiescence generally occurs in the pH range of 8.5- 10.[2]

Taxonomy And Botanical Description: -

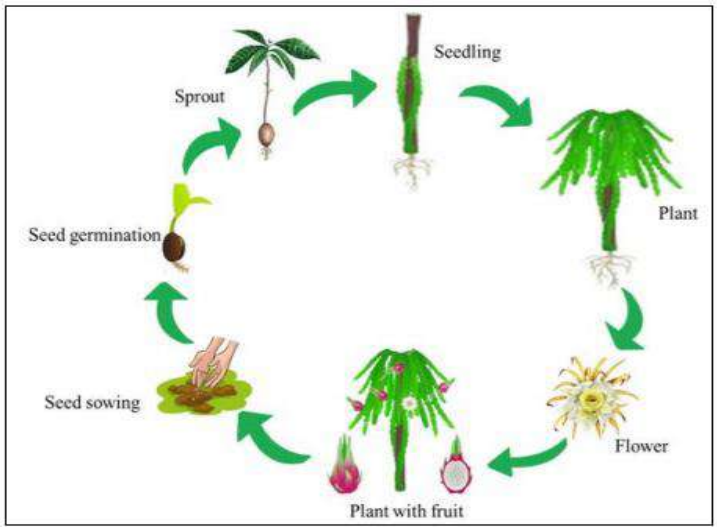
The dicotyledonous family Cactaceae (Caryophyllales) of Hylocereus Spp. comprises between 120 and 200 rubrics conforming of between 1500 and 2000 species set up especially in thesemi-desert, hot tropical regions of Latin America Cactaceae are substantially appreciated for their cosmetic rates, but they also include nearly 250 cultivated species. The title of dragon fruit is as follows

Kingdom	Plantae (Plants)
Sub kingdom	Tracheobionta (vascular plants)
Super division	Spermatophyta (seed plants)
Division	Magnoliophyata (flowering plants)
Class	Magnoliopsida (dicotyledons)
Order	Caryophyllales
Family	Cactaceae (cactus family)
Subfamily	Cactoideae
Tribe	Hylocereae
Genus	*Hylocereus* (Berger) Britt and Rose.
Species	*Hylocereus undatus* (Haw.) Britt and Rose.

have classified different comestible cacti species grounded on nature of stem habit, fruit skin and pulp color. Dragon fruit is substantially available in three variants which are bandied as [3]

Morphology: -

The Dragon fruit factory (Hylocereus spp.) is a presto- growing evergreen cactus, which reaches over to 1.5 to 2.5 measures height with waterless thin vine- suchlike branches. It's a terrestrial or epiphytic cactus with succulent three- soared and green stems.



Life Cycle Of Dragon Fruit

The stem is fleshy and vine- suchlike with many branched parts. Each member has three crimpy bodies and 1- 3 backbones or occasionally spineless. Upstanding roots of the factory absorb water and grow on the underpart of stems and keep the stems on perpendicular shells. Dragon flowers are generally white in color and fruits are 25 to 30 cm long and 15- 17 cm wide with bell- shaped (Merten,). The fruit is beautiful with bright red skin speckled with green scales and white or red meat with multitudinous bitsy black seeds. It needs support to hold the vine overhead.[1]

Cultivation: -

Morton defined formalization in1987. The United States, Israel, Australia, Cyprus, and the Canary islets are among the countries that grow this kind of cactus, as do Thailand and Vietnam in Southeast Asia, Israel, and Cyprus. Dragon fruit, asemi-epiphytic factory, indications in tropical or tropical regions with dry circumstances and normal temperatures of 21 to 29 °C. The factory can repel nipping temperatures(as low as 0 °C) for short ages of time as well as temperatures as high as 38 to 40 °C. The cultivar needs bright sun, interspersing wet and dry seasons, and 500 – 1400 mm of monthly downfall. In soils with a slightly heavy texture, dragon fruit shops thrive. Although shops do well in wettish tropical climates, fruit set issues do sometimes do. Driven by profitable impulses, dragon fruit has garnered global attention, leading to its civilization across further than 20 tropical and tropical countries. These nations include the likes of the Bahamas, Bermuda, Indonesia, Colombia, Israel, the Philippines, Myanmar, Malaysia, and Mexico, among others. generally, the center of dragon fruit product is Southeast Asia, specially encompassing crucial players similar as Thailand and Vietnam.[4]

Pollination: -

The lack of inheritable diversity and/ or the absence of pollinating agents in certain product areas mean that homemade crosspollination pollination is demanded to insure fruit set and development(Homemade pollination is simple and this operation is eased by the flowery

characteristics of Hylocereus, as the different flowery corridor are huge. Eventually, homemade pollination may be carried out from before anthesis of the flower(from 430 P.M.) until 1100 A.M. the coming day. These homemade pollinations are worth bearing and the fruits attained are of excellent quality A butterfly belonging to the Sphingideae family, of the rubric Maduca and early morning by notions(Anon, 2017) Pollination is fulfilled by opening the flower by pinching the bulging part. This reveals the smirches, which are also covered with pollen with a encounter. Alternately, the anthers can be directly deposited (with minimum pressure) on the smirches with the fritters. The pollen can be removed from a flower of a different clone (or from another species) and stored in a box until demanded. The pollen removed from two flowers will be enough for around 100 pollinations with a encounter. It can be stored for from (3 to 9) months at – 18 °C to – 196 °C without threat. Fruits attained after pollination using pollen stored at 4 °C for(3 to 9) months are veritably small. still, the quality of the fruits performing from free pollination is generally lower than that of those attained by homemade cross-fertilization [5]

Harvesting: -

After the first time of planting, the first crop is begun. The major pruning is done after the first planting time, and the crops need to be rinsed frequently. After 24 – 28 days of the fruit embarking in the maturity stage, the dragon fruit's skin becomes red or pink like a rose. The dragon fruit's colour peaks 4- 5 days latterly, but to allow for agreeableness and size growth, it's judicious to stay until around 2 months from fruit set before harvesting. slices take lower time to reach the fruiting stage than shops grown from seed, which generally take three times after planting. After this phase is complete, the dragon fruit, which constantly damages fruit peel, can be gathered by slice and wringing. Dragon fruit can be kept at 4 °C for 25 – 30 days, still at room temperature, it may only last for 10 days or lower.[4]

Medicinal And Nutritional Importance of Fruit: -

The dragon fruit is allowed to be a supernatural fruit with extremely nutritional and mending parcels. Its effectiveness in reducing blood sugar situations in individualities diagnosed with Type 2 diabetes is considerably conceded. As a result, dried dragon fruit is included in diabetes cases' diets. Fruit is allowed to be salutary for nutrient absorption, bone and tooth strength, heart muscle, blood and kerchief development, vulnerable system enhancing, rapid-fire- fire healing from injuries and injuries, pulmonary conditions, and as a mild laxative due to its high amounts of fiber. According to some propositions, dragon fruit can lower cholesterol situations, control blood sugar situations, help colon cancer, boost the functioning of the brain, meliorate bone and order functions, increase visual perceptivity, and contain mixes that are good for the skin. The pulp of fruit is high in Vitamin C and antioxidants, as well as polyunsaturated adipose acids, B vitamins, carotenoids, proteins, and minerals including calcium, iron, and tar. According to examinations, the Vitamin C position of fruit pulp can reach 6000 mg/ 100 g(as shown in Abundant in polyunsaturated fats(including omega- 3 and omega- 6 adipose acids), dragon fruit seeds contribute to lowering triglyceride situations and mollifying the vulnerability to cardiovascular affections. Eating dragon fruit can help the body keep natural functions like removing toxic heavy substance and perfecting vision. Lycopene, which is demanded for the sanguine color of dragon fruit, is believed to be linked to a dropped trouble of prostate cancer.[4]

Table 1. Nutrient content of 100 g edible portion of Dragon fruits (Thokchom et al., 2019).

Component	Amount	Component	Amount
Water	87 g	Vitamin B_1	0.04 mg
Protein	1.1 g	Vitamin B_2	0.05 mg
Fat	0.4 g	Vitamin B_3	0.16 mg
Fiber	3.0 g	Vitamin C	20.5 mg
Carbohydrate	11.0 g	Calcium	8.5 mg
Iron	1.9 mg	Phosphorus	22.5 mg

Phytoconstituents Of Dragon Fruit: -

Dragon fruit holds a high commercial and nutritive value as it is plushly supplied with colorful classes of phytoconstituents of promising medicinal value. It's an abundant source of polyphenols, colors, flavonoids, terpenoids, adipose acids, vitamins, sugars, salutary filaments and minerals like calcium, phosphorus, magnesium, sodium, potassium, iron etc. Which play part in different remedial counteraccusations. These phytoconstituents are classified under broad orders and their remedial conditioning are mentioned in [6]

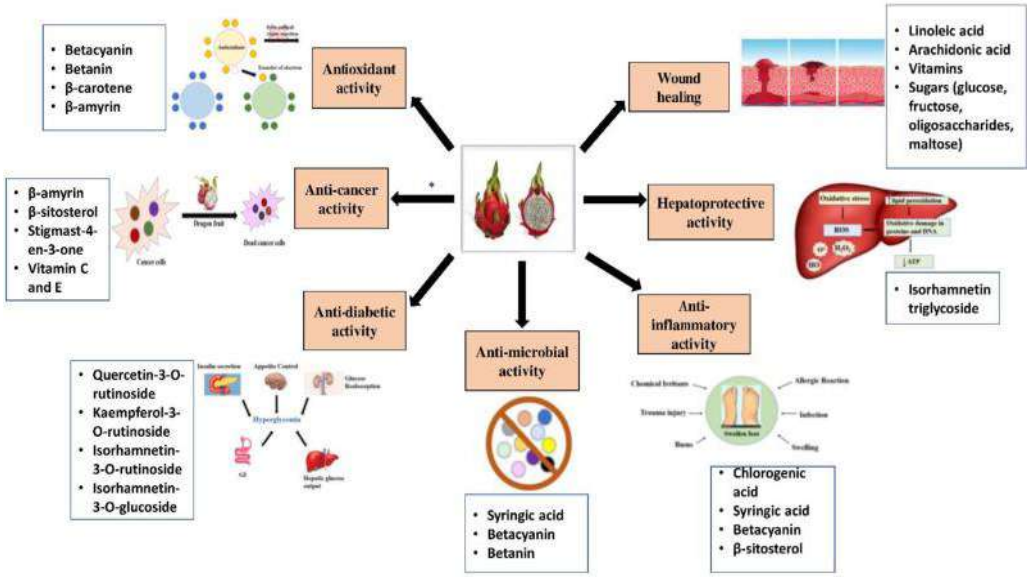
Consumption: -

Fruits Fashion ability increases worldwide due to its seductive colors, sweet, juicy affable taste. Dragon fruit is stylish eaten as raw fresh or dried fruit and occasionally used as a natural coloring agent in colorful drinks and potables. Fruit and its youthful stems of H. undatus and fresh flower kids have been eaten as vegetables, while dried bones are used for original drug. In Taiwan, dried flowers are consumed as vegetables Fresh and dried skins of Dragon fruit are rich in pectins and Betalains, making it natural food thickener and the natural coloring agent. The fruits can be eaten as raw or reused for ice cream, eyefuls, delicacies, jam, wines, shake, for special potables or as flavor for all kinds of drinks and constituents of colorful fashions. The flowers of Dragon fruits have been cooked as mists, lumpia and component of Filipino victuals. The skin pulps also been reused as embotido, pickles, jam and be boiled as sanctification drinks. The stems and skin pulps can also be reused to beauty cleaner. It may be epitomized that Dragon fruit has multipurpose uses.[1]

Health Benefits And Pharmacological Activity Of Dragon Fruit: -

As indicated before, Dragon fruit is healthy and nutritional for mortal health due to its essential nutrients similar as vitamins, minerals, complex carbohydrates, salutary filaments and antioxidants (Table 2). Studies show that Dragon fruit promoted the growth of healthy gut bacteria and Betacyanin which serves as a red or grandiloquent color withanti-oxidative parcels. It's low in calories, zero cholesterol and full of antioxidants; it minimizes cardio- vascular heart problems and maintains blood pressure. Dragon fruit meat is rich in polysaccharides and mixed oligosaccharides; these are acting as stimulating factors for the growth of Lactobacilli and Bifidobacteria. These gastrointestinal microflorae are called probiotics and suppress the growth of gastrointestinal pathogens. Dragon fruit is also used as a natural probiotic. The pulp is juicy and contains multitudinous small black seeds. It's also considered as a implicit source of micronutrients and antioxidants Dragon fruit promotes the mending of injuries and cuts. also, this fruit improves appetite, sight and memory of mortal being. It has old- age retarding parcels, cancer-precluding goods, positive goods on metabolism, digestion, vulnerable system, clear vision, oxidative stress, diabetes and cardiovascular conditions. It strengthens the vulnerable system and is used in the treatment of diabetes. Medicine made from its flower and stem improves blood rotation. The fruit offers multitudinous nutrients, including Vitamin C, phosphorus, calcium, fiber and antioxidants. The nutrients of Dragon fruits help to control diabetes and lower cholesterol

position and help asthma and arthritis. Red Dragon fruit having important iron to increase haemoglobin and erythrocyte situations in pregnant women. It also reduces aortic stiffness. Dragon fruit peel has a high eventuality to be used as a natural color. Fresh and dried Dragon fruit skins both are rich in pectins and Betalains making it natural food thickener and natural coloring agent. One of the natural food cumulative deduced from the disposable part(peel) of the fruit named ‘ Dragon Fruit Coloring Powder’(DFCP) is using videlicet as ‘ albedo’. So, it does n't affect the natural benefit of Dragon fruit. The ‘ albedo’ of Dragon fruit is used as a conventional system to color rice, milk, yoghurt, juice, and confection. It has medicinal values like reducing hypertension and diabetes. The seeds of Dragon fruits are high in polyunsaturated fats(omega- 3 and omega- 6 adipose acids) that reduce triglycerides and lower the threat of cardiovascular diseases. Dragon fruit contains a high position of phosphorus and calcium; it helps to support bones and play an important part in towel conformation and forms healthy teeth .Regular consumption of Dragon fruit that contains a high quantum of Vitamin C would help in fighting against cough and asthma; increase the crack mending parcels and snappily heals the cuts areas, enhance the vulnerable system and also stimulate the exertion of other antioxidants in the body.



Polyphenolic composites are an excellent antioxidant and bioactive free revolutionary scavengers, playing an important part in guarding mortal health. Dragon fruit boosts impunity in individualities due to the presence of bioactive composites. therefore, improves physical and internal health. thus, it can be concluded that Dragon Fruit has a lot of health benefits. It can limit cholesterol position, maintain blood sugar attention, help colon cancer, ameliorate order function and bone conformation, strengthen the brain workings, increase the sharpness of the eyes and can be used in ornamental constituents. Due to its complex complaint- forestallment capabilities and medicinal parcels, as well as the cornucopia of vitamins and nutrients, the civilization of this fruit is fleetly adding worldwide. The red Dragon fruit peel greasepaint has implicit to reduce total cholesterol, triglyceride, and LDL- c and to increase HDL- c situations. Red Dragon fruit peel maquillages can be consumed as a supplement in foods that are anticipated to maintain a healthy body and help hyperlipidemia. It presented more environmental benign antioxidant and act as

antibacterial agents that are significant in the fields of healthcare, food processing, nutraceutical and cosmeceutical diligence. These goods draw the attention of medical studies toward using this fruit in controlling colorful conditions and vital health-promoting factors.[1]

Anti-Oxidant: -

Antioxidant exertion. Exploitation of natural antioxidant substrates in medicinal shops with precautionary influences on cellular damage caused by free revolutionaries, which are involved in multitudinous conditions like cancer, has been adding. thus, the popularity of multitudinous shops in complaint prevention could be attributed to the antioxidant(radical- scavenging) parcels of their constituent phenolic mixes(analogous as flavonoids, phenolic acids, stilbenes, Several studies link the scavenging exertion of antioxidants with the content of total phenolic mixes. Phenolic mixes, like phenolic acid(e.g. gallic acid) and polyphenol(e.g. flavonoids), are largely linked with antioxidant exertion

The antioxidant parcels of the dragon fruit are extensively conceded and the antioxidant exertion of different species, as well as the antioxidant content of different corridor of the factory(e.g. pulp, peel, stem, leafage), have been subordinated of numerous detailed studies utmost studies have been concentrated on two species of the rubric Hylocereus, which stand out in civilization and distribution H. polyrhizus and H. undatus. Two of the most extensively used styles to estimate antioxidant conditioning are 2, 2'- diphenyl- β-picrylhydrazyl(DPPH) and 2, 2'- azinobis(3-ethylbenzothiazoline-6-sulphonic acid)(ABTS ±)(Re et al. 1999). Both are spectrophotometric ways grounded on quenching of stable coloured revolutionaries(DPPH or ABTS) which determine the radical scavenging capability of antioxidants indeed when present in complex natural fusions(e.g. factory or food excerpts) used DPPH assays to test the radical scavenging exertion of pulps and peels of H. polyrhizus and H. undatus and set up that for both species the peels contained advanced radical scavenging exertion than the pulps. also, the antiradical exertion for peels of both species was advanced than that of the positive control, a potent synthetic antioxidant named butylated hydroxyanisole (BHA), at approximate attention of (defined as the attention of an asset where the response(or list) is reduced by half) values for the peels of H. polyrhizus and H. undatus were 0.30 and 0.40 mg mL – 1, independently, advanced than BHA(0.15 mg mL – 1). In the case of pulps of both species, they showed low chance of radical scavenging conditioning over the measured excerpt attention, suggesting that their IC50 values could be advanced than 1.0 mg mL – 1. Interestingly, the total phenolic content (TPC) assay demonstrated that peels of both Hylocereus species contained advanced phenolic content than the pulps In a farther study with red pitaya (H. undatus), attained analogous results like regarding the advanced antioxidant exertion of the peel compared to the pulp. therefore, the antioxidant exertion of the pitaya peel(445.2 mg mL – 1) was lesser than in the pitaya pulp(1 266.3 mg mL – 1). The loftiest attention of composites with antioxidant exertion in the fruit peels, generally discarded, supports its value as leavings rich in fibre, nutrients, and bioactive composites.

The DPPH assay performed by on the ethanol excerpts from pulp and fruit(peel and pulp) of H. polyrhizus and H. undatus showed EC50 values of 9.93 and 11.34 mg mL – 1 for the pulp and fruit of H. polyrhizus, independently, and of 9.91 and 14.61 mg mL – 1 for the pulp and fruit of H. undatus, independently(EC50 is defined as the attention of a medicine that gives half-minimal response). Within the same species of Hylocereus, the fruits(peels and pulps) showed a advanced phenolic content than the pulps, which was also related to a advanced antiradical power. still, when the authors compared the antiradical power of the

two species of Hylocereus, they set up that i) it was n't commensurable to the total phenolic content in the pulps, i.e. the total phenolic content of H. undatus pulp was advanced than that of H. polyrhizus, and ii) both species showed no significant difference in the ascorbic acid content. These results indicate the significance of ascorbic acid as an antioxidant and suggest a synergistic relationship between the ascorbic acid and the phenolics in the radical scavenging exertion. The variation in the attention of phenolic composites and ascorbic acid in fruit is associated with the type of civilization, the development stage, and the conditions of civilization among.[7]

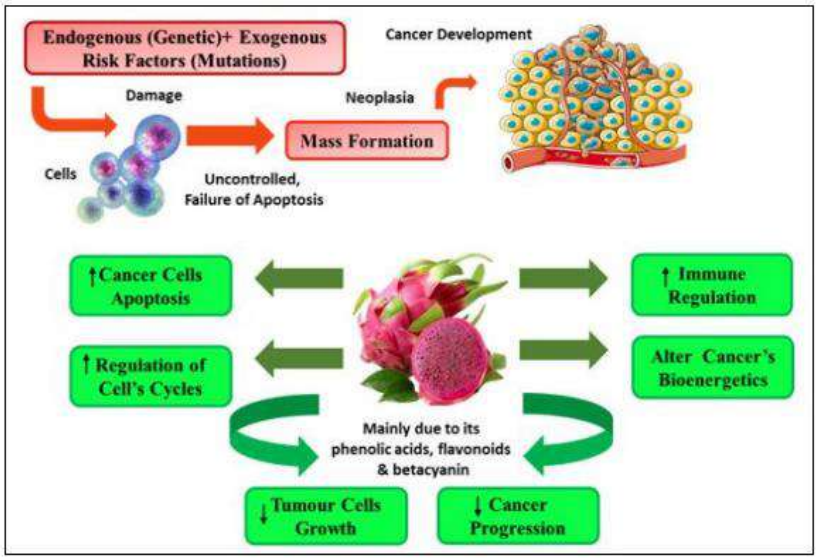
Anti-Diabetics :-

Diabetes mellitus is one of the most common systemic conditions in the world, linked to hyperglucemia as the result of a malfunction of the pancreas in the product of insulin and/ or to the shy perceptivity of cells to the action of insulin(American Diabetes Association 2009). In the folk drug of numerous countries, diabetic treatments have traditionally included shops similar as neem(Azadirachta indica), ivy gourd(Coccinia indica), bit ter gourd(Momordica charantia), jamblon(Syzygium cumini), aloe vera(Aloe barbadensis Miller), and chicory(Cichorium intybus) In general, medicinal shops show antidiabetic goods through biochemical mechanisms similar as recovery of pancreatic β- cell function, enhancement of insulin perceptivity by receptors, stimulation of insulin stashing, inhibition of liver gluconeogenesis, enhanced glucose immersion, and inhibition of glucose-6-phosphatase, β-amylase, and β- glucosidase conditioning. The antidiabetic capacity of dragon fruit has been the subject of multitudinous studies. delved theanti-insulin resistant exertion from red pitaya(Hylocereus polyrhizus) in insulin resistant rats convinced by fructose supplement. The results of this study showed that pitaya lessened insulin resistance, suggesting that antioxidant and answerable salutary fibre contents of red pulp pitaya are responsible for itsanti-insulin resistant capacity. observed that the waterless excerpt of the fruit pulp of H. undatus at boluses of 250 and 500 mg kg – 1 body weight dropped fasting blood glucose situations in streptozotocin- convinced diabetic rats, although not to normal situations. similar lowering effect was limited and could n't be increased with advanced boluses of pulp excerpt. The effect of red pitaya(H. polyrhizus) consumption on blood glucose position and lipid profile of type 2 diabetic cases was assessed in a study of. The trial was conducted during a sevenweek period divided into three phases onepre-treatment week(phase 1), four weeks of treatment(phase 2) and twopost-treatment weeks(phase 3). During phase two, cases were treated with 400 g and 600 g of pitaya per day, without interposing their drug. Dieting blood samples and anthropometric measures were covered throughout the study to test the effect of pitaya on blood glucose, triglyceride, and cholesterol(aggregate, low- viscosity lipoprotein(LDL-) and high- viscosity lipoprotein(HDL-)) situations, as well as Body Mass Index(BMI). The results showed that while the consumption of 400 g of fruit was more effective in lowering triglyceride situations, the treatment with 600 g was more effective in dwindling blood glucose, total and LDL- cholesterol situations, and adding the HDL-cholesterol position. Body weight and total body fat did n't present any significant differences between both treatments.[7]

Anti – Cancer:-

Anticancer exertion colorful studies have shown the anticancer parcels of dragon fruit. The experimenters have set up that nanoparticles of fruit help in inhibiting the growth of MCF- 7 bone cancer cells, mortal prostate cancer cell lines, mortal gastric cancer cell lines. Species of H. undatus and H. polyrhizus reduces the threat of colon cancer by producing acetic acid, propionic

acid and lactic acid. Phenolic acids, beta- cyanin, betasitosterol, beta- amyrin, nascence- amyrin, beta- carotene and flavonoids are the prominent bioactive composites that are majorly responsible for flaunting anticancer exertion. Bioactive composites of the fruit are effective against the mortal liver cancer, bone cancer and carcinoma cells. The peel has further inhibitory effect than meat against the growth of cancer cells and carcinoma cells but both the peel as well as the meat are rich in antioxidants and polyphenols 26 Hylocereus polyrhizus species contain lycopene, a natural antioxidant which is conceded for forestallment of cancer causing free revolutionary conformation.[8]



Diagrammatic Representation of Anticancer Activity of Dragon Fruit

Anti- Inflammatory Activity: -

On dragon fruit, anti-inflammatory action has been observed. The skin and meat of the dragon fruit were combined, and the admixture was separated using vacuum- distilled water, water, and drying. Following that, the issues will be applied to bioassay testing against 5- lipoxygenase (5-Lipox), acetyl cholinesterase enzymes(pang), and clooxygenase- 2(COX2). According to the findings of these examinations, excerpts made from the meat of dragon fruits performed exceptionally well in the bioassay test against the three enzymes and had a lesser inhibitory effect on the enzyme acetylcholinesterase than on the other two. This has demonstrated that dragon fruit can reduce inflammation, as substantiated by the medium directly associated with cholinergicanti-inflammatory goods. also, the goods of dragon fruit meat on the COX and Lipox enzymes suggest that it has a strong energy that may obstruct the pathways leading to leukotriene and prostaglandins. This indicates that the characteristics of dragon fruit includeanti-inflammatory rates. The ethanol excerpt from red dragon fruit peel has an component called betalain, which inhibits the recap factor NF- κB. This prevents the separation of seditious genes like TNF- α and IL- 1β[9]

Hepatoprotective Activity: -

Rats that have been poisoned do benefit from dragon fruit excerpts. Owing to the high attention of antioxidants deduced from the forenamed consumption of CCl4. Particularly, flavonoids and triterpenes are phytochemical factors that cover the liver from fat peroxidation; still, the silymarin capsule has little defensive effect against liver injury due to an enhancement in serum glutamicoxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase(SGPT). When convinced with CCl4, it has been

demonstrated that dragon fruit excerpts effectively guard the liver from habitual damage in test creatures[9]

Anti – Microbial Activity:-

Numerous experimenters delved that the chemistry of betalains, the major bioactive composites in H. polyrhizus The red dragon fruit peel excerpts were attained by maceration using detergent at pH 5 phytochemical characteristics, total phenols, antioxidant, and antimicrobial exertion of the peel excerpts were observe The ethanol and methanol excerpts of original dragon fruit showed an overall betteranti-bacterial exertion against Bacillus species, Vibrio species, Escherichia coli and Staphylococcus species reported that the chloroform excerpts of both Hylocereus species peel showed topmost antibacterial exertion with H. polyrhizus peel being lesser than H. undatus peel. The chloroform excerpt of red meat pitaya peel can be classified as a good source of potent natural antibacterial agent for both, Gram-positive and Gram-negative bacteria. These studies mentioned that betacyanins, flavonoids, phenolic acids, tannins, and terpenoids might be responsible composites for the antimicrobial exertion The stem excerpt of H. polyrhizus mad powerful antimicrobial exertion against Staphylococcus aureus, Pseudomonas aeruginosa Candida albicans, Aspergillus niger, and F. oxysporum with inhibition zones 29, 29, 29.5, 17.5, and 29.5 mm and , 11, 10, 8, and 16.5 mm, independently, by mug agar and fragment prolixity styles, independently[10]

Cardio Protective Activity:-

Theanti-thrombotic effect of the polyphenols in H. polyrhizus meat enhances its formerly strong cardio defensive rates 26). Two heat processing ways for this dragon fruit were applied to rats in one study. According to the analysis's findings, red pitaya's cardio defensive constituents are antioxidant material and polyphenols[9]

Wound Healing: -

The injured- diabetic rat was given an excerpt of dragon fruit leaves and blossoms, and as a result, the crack mending exertion of the rat increased dramatically. While adding tensile strength by promoting mending exertion, bioactive substances like hydroxyproline, DNA collagen content, and total proteins set up in dragon fruit pulp were formerly utilized as a traditional drug to cure injuries. Young stems of the undatus factory, dragon fruit, and fresh flower kids can all be consumed as vegetables. Dried flower kids are used to make manual drugs. In caffs , it's constantly used in fruit salads and as juice. Due to the high vitamin C content of dragon fruit, regular consumption can help help cough and asthma. It can also speed up the mending of cuts and injuries[11]

Future Perspectives of Dragon Fruit: -

Dragon fruit civilization is truly important worldwide, and from a nutritional and bromatological consistence perspective, the fruit and its corridor need to be more analyzed in order to be better used by the medicinal and food sedulity. Given its capability to yield nippy profitable returns, with development commencing within the original timepost- colony, and its capacity to thrive amidst challenging metabolic conditions, particularly in regions marked by limited water vacuity, dragon fruit civilization emerges as a doable recommendation for areas incongruous for nurturing other fruit kinds that demand more favorable climatic conditions and sufficient water resources for irrigation. Every element of the plant, encompassing cladodes, flowers, and fruits, holds significant quantities of functional mixes with established remedial attributes. These include the capability to palliate hypertension, a characteristic that has piqued the interest of the pharmaceutical sector in lodging these precious mixes. numerous examinations propose that the fruit's functional attributes contribute to abating the vulnerability to habitual

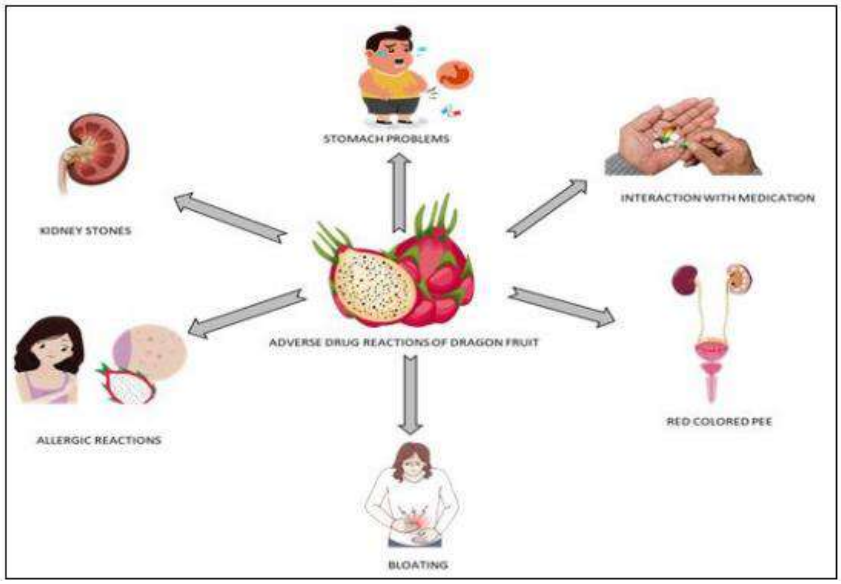
affections. The elevated attention of bioactive mixes exhibiting antioxidant parcels within the pitaya bark accentuates its appeal from both pharmacological and nutritional slants due to its enhanced antioxidant functionality. nonetheless, the pitaya boasts profitable characteristics that place it within the tropical fruit order, yet its recognition remains limited despite harboring substantial eventuality for both domestic and global requests. Regrettably, products associated with Pitaya remain scarce within the request, pressing the necessity for comprehensive disquisition aimed at enhancing their marketable viability. Due to its fairly low nitrogen conditions compared to multitudinous other fruit crops, the possibility of organic civilization using locally sourced organic coprolites and composts becomes realizable for this crop.[4]

Traditional Uses Of Dragon Fruit: -

Pitaya has been used as traditional drug and consumption purposes in Central America, where it's also common for pitayas to be grown in family auditoriums. The leaves and flowers of pitaya were used by the ancient Mayas for medicinal use as a diuretic and mending agent. Mayas also utilizes the pitaya fruits as a diuretic, hypoglycemic, against heart complaint, crack detergent, and excrescence dissolution, and as a cure for dysentery. In addition, the flowers can be consumed as it's or by drinking it as a tea, the seeds retain a laxative effect, the fruit has shown an effect on gastritis, and the stalk can also be used for order problems [2]

Adverse drug Reaction: -

Dragon fruit is known for its visually witching look and implicit benefits of health. thus, consuming dragon fruit in temperance is considered to be safe for maximum population. nonetheless, unlike numerous other foods, pitaya or dragon fruit can also beget certain adverse responses in certain individualities. Some constantly observed side goods associated dragon fruit includes stomach problems, sanguine coloured urine, drug relations, order monuments, bloating of stomach among others.[4]



ADVERSE REACTION OF DRAGON FRUIT

CONCLUSION: -

The nutritive value and health benefits of dragon fruit have contributed to its growing fashionability in India. This fruit is consumed with the assertion that it offers remarkable nutritive content and implicit remedies for different health enterprises. After assessing multiple exploration studies, it can be forcefully concluded that dragon fruit holds substantial nutritive and medicinal worth. It's

amended with essential nutrients similar as vitamin C, B1, B2, B3, a notable fiber content, as well as vital minerals including calcium, iron, and phosphorus. Dragon fruit is a rich source of wide range of phytoconstituents which contribute to multiple remedial conditioning like anti-oxidant, anti-cancer, anti-diabetic, antimicrobial, antihyperlipidemic and hepatoprotective etc. The fruit ingredients also retain crack mending, anti-viral, anti-anemic, anti-inflammatory, prebiotic and microvascular defensive conditioning. Although the preclinical studies demonstrate the safety and efficacity of phytochemicals attained from dragon fruit but clinical studies are demanded to be conducted to further validate its remedial counteraccusations. also, necessary way to overcome challenges faced during and after its civilization should also be explored to gain abundant amounts of bioactive.

REFERENCES

1. Hossain F, Numan SM, Akhtar S. Cultivation, Nutritional Value and Health Benefits of Dragon Fruit (Hylocereus spp.): A Review. Int J Hortic Sci Technol. 2021;9(2):259-269. doi:10.22059/ijhst.2021.311550.400
2. Mande DD, Kumbhare MR, Surana AR. Phytochemical composition, biological activities and nutritional aspects of Hylocereus undatus: a review. Infect Dis Herb Med. 2023;4(1). doi:10.4081/idhm.2023.291
3. Balendres MA, Bengoa JC. Dragon fruit diseases. Elsevier. Published online 2019.
4. Rathi KM, Singh SL, Gigi GG, Shekade SV. Nutrition and Therapeutic Potential of the Dragon Fruit: A Qualitative Approach. Pharmacognosy Res. 2023;16(1):1-9. doi:10.5530/pres.16.1.1
5. Perween T, Hasan M, Tamanna Perween C, Mandal K. Introduction. ~ 1022 ~ J Pharmacogn Phytochem. 2018;7(2):1022-1026.
6. Chatterjee D, Mansuri S, Poonia N, Kesharwani P, Lather V, Pandita D. Therapeutic potential of various functional components presents within dragon fruit: A review. Hybrid Adv. 2024;6(December 2023):100185. doi:10.1016/j.hybadv.2024.100185
7. Luu TTH, Le TL, Huynh N, Quintela-Alonso P. Dragon fruit: A review of health benefits and nutrients and its sustainable development under climate changes in Vietnam. Czech J Food Sci. 2021;39(2):71-94. doi:10.17221/139/2020-CJFS
8. Bhadauria S, Choudhary T, Chaurasia S. Exploring the Therapeutic Potential of Dragon Fruit: an Insightful Review. Int J Pharmacogn. 2024;11(6):222-234. doi:10.13040/IJPSR.0975-8232.IJP.11(6).222-34
9. Jadhav SB, Jadhav NY. An eye catching and comprehensive review on dragon fruit (An exotic super fruit). J Pharmacogn Phytochem. 2023;12(6):243-251. doi:10.22271/phyto.2023.v12.i6c.14790
10. Kumar S, Tripathi V, Kumari A, Chaudhary V, Kumawat P. A-review: on Nutritional and Medicinal Importance of Dragon Fruit (Hylocereus species). Ecol Environ Conserv. 2022;28:247-253. doi:10.53550/eec.2022.v28i07s.041
11. Dhande C, Bagchi P. A Study on the Nutritional and Medicinal Properties in Dragon Fruit: A Review. Atlantis Press International BV; 2023. doi:10.2991/978-94-6463-294-1_5.

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