

Dragon fruit: a potential source for nutritional security

Dragon (pitaya), a delicious fruit, has very high nutritional value. It is considered as 'super food'. Dragon fruit has various health benefits because it is rich in vitamins, minerals, fibre, protein and antioxidants. Dragon fruit plays a greater role to combat against several chronic diseases and keep safe our body from several chronic diseases. It boosts immune system, regulates diabetes, helps in digestion, lower cholesterol levels, improves memory, enhances metabolism, prevent cancer, heart disease, and aids in weight loss.

DRAGON fruit (*Hylocereus* spp.) is a fast-growing, epiphytic or xerophytic, vine-like cactus plant, belonging to genus *Hylocereus*. It is also known as Pitaya, Moonlovers, Night blooming Cereus, Strawberry Pear, Belle of the Night and Conderella plant. The skin is covered with bracts, or “scales” – hence the name dragon fruit. It is native of Central and Southern America and is being cultivated in Southeast Asian countries including Malaysia, Indonesia, Taiwan, Thailand, Sri Lanka, Bangladesh and Vietnam. Recently, India also started cultivation of dragon fruits.

Dragon fruit is gaining popularity with consumers due to its unique shape and colour and have recently drawn much attention of growers worldwide, not only because of their red-purple colour and economic value as food products, but also for their antioxidative activity from the betacyanin contents. The fruit is a promising crop in Mizoram as well as whole India. We have conducted trials for standardizing package of practices for dragon fruit under Mizoram climatic conditions.

Dragon fruit start fruiting 14-16 months after planting and fruits are ready for harvesting 30-35 days after flowering. Average fruit weight of 300-350g is found among different treatments. The market price of dragon is ₹ 250-300 per kg. The initial establishment cost of orchard is little high after that only cultural practice is required. Dragon

fruit gives continuous economic yield up to 20-25 years after establishment of orchard. This fruit give four time fruiting in a year. The yield of dragon fruit is 8-10 tonns per ha. Therefore, it can be assumed that dragon fruit is going to succeed well under Mizoram climatic conditions. Dragon fruit gives higher yield and it improves socio-economic condition of farmer.

Nutritive Value of Dragon

The red variety contains high levels of antioxidants, which is beneficial for general wellbeing and good health. Commercially, white flesh (*Hylocereus undatus*) and red flesh (*H. polyhizus*) are cultivated in different countries. The red flesh variety is more popular among Asians due to attractive colour and taste, which is sweet and less insipid while white flesh is more popular in European market. Dragon fruit pulp contains numerous varieties of vitamins and minerals which are essential for normal physiological processes of our body.

Vitamins A: Dragon fruit is a good source of carotene and flavonoid namely beta carotene and

Table 1. Nutritional value of dragon fruit

Principle	Nutritive value/10g	Principle	Nutritive value/100 g
Water	87 g	Niacin	0.16 mg
Protein	2.0 g	Vitamin C	21 mg
Carbohydrate	11 g	Vitamin E	106 µg
Fat	0.4 g	Calcium	5.7 mg
Fibre	3 g	Phosphorus	23 mg
Vitamin A	20 µg	Iron	3.4 mg
Riboflavin	0.05 mg	Zinc	14 mg





betaine. Consumption of dragon fruit is known to protect the body from lung and oral cavity cancer and improve eye sight, fights dry eye and also prevent night blindness.

Vitamins C: Dragon fruit is an excellent source of vitamin C, it assists in strengthening immunity, improving the absorption of iron by the body, generating collagen which improve our teeth health, and making a healthy and glowing skin.

Vitamins E: Vitamin E, which is found in dragon fruit, help regulate sex hormones and improve sex drive.

Iron: Dragon fruit contain good amount of iron, hence it is a famous natural element for people suffering anaemia. Menopausal and pregnant women can include this fruit in diet to increase iron level and prevent anaemia.

Magnesium: Dragon fruit is rich source of magnesium and half dose is required for hundreds of biochemical reaction that support every day function of our body. About half of the magnesium is need in our body to support bone structure. These biochemical reactions are starting point for normal muscle concentration, stable blood pressure and nerve function. In order to help all of these functions, women require 310-320 milligrams of magnesium everyday and man needs 400-420 milligrams of magnesium each day. Dragon fruit provides 39 milligram of 100 gram of pulp.

Zinc: Dragon fruit provides small amount of zinc. This mineral is required in small amount, has distinct function in our body: structural, catalytic and regulatory. Structurally zinc strengthens the cell membrane. Inadequate zinc cell membrane becomes weak and more susceptible to oxidative stress. This may increase risk of illness and chronic disease. In catalytic role, zinc enhances chemical reaction in our body system. In regulatory role of zinc, it is essential

for hormone secretion, gene expression and nerve communication. Men require 11 milligrams and women 8 milligrams zinc every day. Dragon fruit supplied 0.38 milligram of zinc of 100 gram of pulp.

Potassium: Dragon fruit is packed with essential minerals, particularly potassium which help in protect your heart and kidney. Regular consumption of potassium is extremely essential for cellular, electrical, nervous functions of our body. Potassium plays a key role in maintaining water content, pH or acid balance in our body.

Calcium: Dragon fruit is loaded with essential minerals, particularly calcium which helps in maintaining bone structure.

Health Benefits of Dragon Fruit

Dragon fruit is a natural reservoir of antioxidants. Antioxidants are bioactive substances that prevent oxidation or inhibit reactions promoted by oxygen or peroxides and thereby protect cells from damage caused by oxidative stress. Because oxidative stress mediates endothelial dysfunction that has relevance to the pathogenesis, progression and prognosis of a wide spectrum of CVD, antioxidants may prevent CVD by ameliorating endothelial dysfunction. The health benefits of dragon fruit are as follows:

Cancer protection: Red dragon fruit contains more antioxidant and pigments than other types of dragon fruit. The red dragon fruit contains vitamin C and lycopene which can prevent from certain disease such as cancer, especially prostate cancer.

Promote healthy digestion: Fibre content in dragon fruits promote healthy digestion system. Dragon fruit promote healthy digestion and prevent inflammation that happens in digestion tract.

Prevent constipation: Fibre content in red dragon fruit not only boost your digestion system but it also improve bowel movement and facilitate the stool to pass large intestine easily. Fiber content in red dragon fruits adds more bulk to stool and prevent constipation.

Boost immune system: In red dragon fruit, high amount of vitamin c is present which can boost immune system function. Consuming of dragon fruits not only provides high amount of vitamin c but also high amount of antioxidants and other phytonutrients which give significant effect in supporting immune system function. Eating of dragon fruits scavenges free radicals and fight against diseases.

Prevent diabetes: Present of fibre content in dragon fruits can stabilize the sugar level in blood. Dragon





fruit is also considered as food with low glycemic index. Consumption of low glycemic index food can give benefits to your body and it make the insulin can work properly while high GI food can promotes insulin resistance and trigger the development of diabetes.

Improve brain function: Dragon fruit is rich in antioxidants, vitamin, mineral and other phytonutrients that can protect brain from damage and promote healthy nerve function.

Prevent heart disease: Dragon fruit is excellent source of antioxidants which play very important role in keeping the heart from oxidative stress caused by free radical damage by scavenging free radicals. Presence of fibre content in dragon fruit that can reduce bad cholesterol in blood and protect the blood vessel lining from cholesterol effect which can increase the risk of heart disease.

Maintain cholesterol level: Cholesterol is a type of fat which consider as bad fat and it is also known as Low Density Lipoprotein (LDL). The excessive amount of bad cholesterol in our body cause several health problems such as atherosclerosis, heart disease, high blood pressure. Red dragon fruit is a good source of fibre that can maintain the cholesterol level within the blood and prevent from arteries wall thickening. The fibre binds the bad fat and make free of the body.

Slower aging process: Everyone wants to look beautiful with glowing face, skin and healthy young life. It's all possible by including dragon fruit in daily diet. Red dragon fruit is full pocket of antioxidants, phytonutrients, vitamins and minerals that can slower the aging effect in the body and boost healthy life. Aging that happen in human body is mostly caused by free radicals effect. Antioxidants slower the aging effects in the body by scavenging



free radicals from your body.

Improve vision: Dragon fruits contain vitamin A and some antioxidants which protect the eye from effect of free radicals. Eating of dragon fruits can prevent certain eye diseases such as cataract and macula degeneration.

Fasten healing wound: Red dragon fruit is excellent for health benefits for healings wounds in faster ways. In your body if you

have any injury cut on skin, having wound, rubbing red dragon fruits juice on your skin can speed up wound healing process. Eating of red dragon fruits or drinking of dragon fruit juice also help to fasten wound healing process inside body.

Promote healthy hair: Eating of red dragon fruit can improve your hair health and beauty. Red dragon fruit is excellent packet of antioxidants and nutrients that can enhance hair colour, shininess and smoothness. Red dragon fruit juices apply on scalp and hair stem or use it as hair mask.

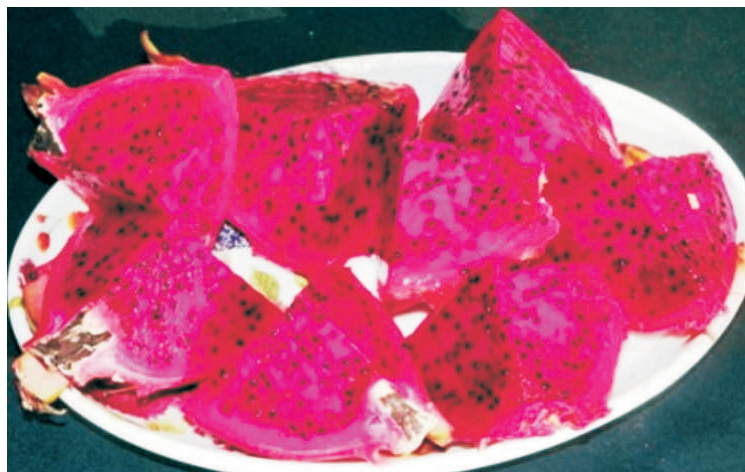
Prevent acne: Acne is one of the most annoying case that can be experienced by most of the people especially teenagers. Acne occurs on face that it is

caused by the infection of bacteria. Red dragon fruit contains excellent quantity of antioxidants and anti-inflammatory competency that can prevent bacterial infection and clean clogged skin pores. Red dragon fruit juice and pulp paste can be used for preventing and treating of acne.

Reduce arthritis pain: Arthritis is a common symptom of

autoimmune disease which affects the joint. In autoimmune disease body has higher amount of immune cells and those immune cells consume healthy cells in the body. Red dragon fruit is an excellent source of anti-inflammatory properties which can reduce the sign of arthritis and relieve the joint pain.

Help in weight lost: You want to take snack but worry if gaining more weight, just start to take dragon fruit. Red dragon fruits contain good amount of fibre that makes your stomach feel full and



satisfied. It prevents you from early hunger and help in reducing body weight because reduce fat cell in the body.

Maintain healthy skin: Red dragon fruit is very good for healthy skin. Drinking of red dragon fruit juice everyday not only improves health and but also makes your skin glowing and firm. Red dragon fruit is an excellent source of antioxidants and phytonutrients that can scavenge the free radicals effects on skin which can produce wrinkle and dullness. Red dragon fruit contains vitamin C which enhance glowing of skin and make wrinkle free and dullness.

Maintain strong bones: Red dragon fruit contains good amount of calcium that can help improve bone mass and protect from osteoporosis. Osteoporosis mainly occurs in elderly people, especially women and by consuming red dragon fruit regularly, it helps in maintaining strong bones.

Prevent anaemia: Anaemia is caused by iron deficiency which is most commonly occurs in women and it will make weak you whole day and not feel healthy. Iron is a key mineral which is necessary in keeping normal blood cell count and functions. Taking of red dragon fruit everyday that make

healthy, prevents from iron deficiency and keep away from anaemia.

Repair body cell: Red dragon fruit also contains quality protein that can help in repairing and regenerating body cell. Protein plays an important key role in building block of almost all body organs and deficiency of protein can cause several problems such as healing process.

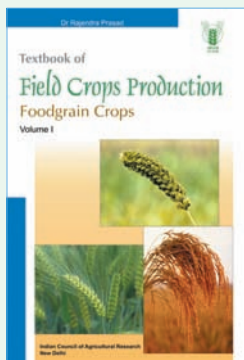
Treat sunburn: Dragon fruit pulp is very helpful in treating in sunburn as it contains vitamin B3 that can help in moisturizing skin and release the heat caused by sun burning. If you feel pain by getting sun burn just mixed red dragon fruit juice with cucumber or alovera. This treatment will make you feel relief and better.

Improve appetite: Red dragon fruit improve appetite, treats stomach upset and discomfort feeling in stomach.

For further interaction, please write to:

Drs Vishambhar Dayal, T Bhoopathi, S K Dutta, Saurav Saha, Lungmuana and S B Singh (Scientists), ICAR Research, Complex, NEH Region, Mizoram, Kolasib, Mizoram 796 081. **Dr Sunil Kumar** (Scientist), IARI, New Delhi 110 012.

Textbook of *Field Crops Production* – Foodgrain Crops



(Volume I)

The first edition of Textbook of Field Crops Production was published in 2002 and there has been a heavy demand for the book. This book is now being brought out in two volumes. The chapters cover emerging trends in crop production such as System of Rice Intensification (SRI), export quality assurance in the production technology of commodities like Basmati rice, organic farming, resource conservation technologies, herbicide management etc. Good agronomic practices must judiciously inter-mix the applications of soil and plant sciences to produce food, feed, fuel, fibre, and of late nutraceuticals while ensuring sustainability of the system in as much possible environment and eco-friendly manner. The advent of hydroponics, precision farming, bio-sensors, fertigation, landscaping, application of ICT, GPS and GIS tools, micro-irrigation etc. is in the horizon. The textbook covers both the fundamentals of the subject and at the same time inspire and prepare both teachers and students for the emerging frontiers.

TECHNICAL SPECIFICATIONS

No. of pages : i-xii + 396 • Price : ₹ 500 • Postage : Rs 100 • ISBN No. : 978-81-7164-116-1

For obtaining copies, please contact:

Business Manager

Directorate of Knowledge Management in Agriculture
Krishi Anusandhan Bhavan-I, Pusa, New Delhi 110 012
Tel : 011-25843657, Fax 91-11-25841282; e-mail : bmicar@gmail.com