

STUDY OF *OPUNTIA ELATOR MILL.* RIPEN FRUIT JUICE WITH DRIED STEVIA EXTRACT AS A NATURAL HEALTH SUPPLEMENT FOR BUILDING IMMUNITY IN CORONA VIRUS

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Abstract

Objective: The objective of the study is to understand usage of Opuntia Elatior Mill. Ripen fruit nectar sweetened with stevia as a natural health supplement for building immunity in times of COVID-19 pandemic.

Material, Method and Analysis: Oral ingestion of 100ml per day “Hb+”, a patented product of Royal Gabat Food Science and Technology LLP. “Hb+” is 100% undiluted and pure fruit pulp of Opuntia Elatior Mill. Ripen fruit sweetened with dried stevia extract. 50ml of Opuntia Elatior Mill. Ripen fruit pulp with 150ml water and 5ml Lemon Juice to be administered twice a day.

Analysis and Conclusion: It was observed that various individuals had a significant better immunity and increase in hemoglobin levels as well with 100ml per day administered dosage of Opuntia Elatior Mill. Ripen fruit pulp sweetened with stevia without any signs and symptoms of toxicity. Cactus fruit contains substantial amounts of ascorbic acid, vitamin E, carotenoids, fibers, amino acids and antioxidant compounds (phenols, flavonoids, betaxanthin and betacyanin) which have been put forward to be increasing immunity. Dried Stevia extracts have shown antiviral activity against corona virus and “Hb+” can be used as a natural immunity booster supplement in COVID-19.

Keywords: Opuntia Elatior Mill., Betaxanthnin, Flavonoids, Polyphenol, Dried Stevia Extract, Antiviral

INTRODUCTION

Classical texts of Ayurveda describe the drugs with regards to their pharmacological properties and actions. The indication, contraindication, and the effect of the drug on dosha, dhatu, and mala are also well-described. On the contrary, in folklore practice, the drugs are prescribed basing on the personal experience of the concerned physician and this tradition passes on from generation to generation. Prolonged and apparently uneventful use of herbal medicines may offer testimony of their safety and efficacy. Experimental evaluation is required to be carried

out to provide a scientific basis for their traditional use as safe and efficacious.[1]

Opuntia elatior Mill. Is a folklore medicinal plant, and it's ripen fruits are used by the local people of Gujarat in treating anemia and general debility. Fruit is also a rich source of nutrients and vitamins[2,3] and are eaten fresh, dried or preserved in jams, syrups or processed into candy-like products.[4,5] Fruit of O. elatior is reported for its hematinic, analgesic, and anti-asthmatic activity including its safety reports during the acute toxic study.[6]

MATERIAL AND METHOD

Material

Royal Gabat Food Science and Technology LLP is a Start-up Enterprise incubated at GUSEC (Gujarat University Startup and Entrepreneurship Council). The ripen fruits of *O. elatior* were collected from its natural habitat from surrounding area of Junagadh, Gujarat, India by farmers for Royal Gabat Food Science and Technology LLP. Fruits of *O. elatior* are commonly known as “Findla” in Gujarati, “Prickly Pear” in common English, “Tuna” or “Nopal” in Spanish. Royal Gabat Food Science and Technology LLP converted the fruits into an undiluted, pure and zero added sugar fruit pulp which is sweetened using dried extracts of stevia, commercially available with brand name “Hb+”. “Hb+” is made by Royal Gabat Food Science and Technology LLP using their patented formulation and process. [7] “Hb+” used as a ripen fruit pulp of *O. elatior* is compliant to FSSAI.

Method

Administered intake of 50ml “Hb+”, ripen fruit pulp of *O. elatior* with 150ml water and 5 ml fresh lemon juice, twice a day. Cumulating to 100ml of “Hb+”, ripen fruit pulp of *O. elatior* intake per day. The dosage of 100ml per day was several times lesser than the the maximum RDI of 20ml/Kg body weight.[8]

Analysis

Immunity is the capability of multicellular organisms to resist harmful microorganisms from entering it. Immunity involves both specific and nonspecific components. The nonspecific components act as barriers or eliminators of a wide range of pathogens irrespective of their antigenic make-up. Other components of the immune system adapt themselves to each new disease encountered and can generate pathogen-specific immunity. An immune system may contain innate and adaptive components.

Covid-19 the current viral infection can be encountered by strong immunity and hence one can recover soon without developing complex symptoms. Covid-19 can result in a minor infection, provided you have a robust immunity.

The food you eat plays a key aspect in determining your overall health and immunity. A protein rich diet keeps you in good shape. Regularly consume fruits and vegetables rich in β -carotene, Ascorbic Acid, and other essential vitamins and minerals which act as immunity boosters. Immunity boosters are defined as broad functional plant based ingredients.

The broad immunity boosters are complete proteins which provide all essential amino acids, Vitamin D, Vitamin E, Vitamin C (Ascorbic acid), Vitamin K and antioxidants which can fight against the free radicals which can detoxify the body from all toxins. Which also plays important role in the body for proper functioning of the immune system.

The nutritional value of Hb+ mainly rests on its content in ascorbic acid, vitamin E, carotenoids, fibers, essential amino acids, sterols, betalin, phenols, flavonoids, betaxanthin and betacyanin [9]. Hb+ contains 2400mg/100ml dried stevia extract. The dried, purified extract at a dose of 4000 mg/ml inactivated Teschen disease virus by 0.75 lg tissue cytopathic dose, IRT virus by 0.5 lg tissue cytopathic dose, and coronavirus by 0.66 lg tissue cytopathic dose.[13] The commonly used antiviral agent remantadine is known [14] to have high virustatic action but virtually no virucidal activity, i.e., it does not suppress viruses in the intercellular space or in blood vessels. Unlike remantadine, solutions of the dried, purified Stevia extract had marked virustatic and virucidal properties.

Ascorbic Acid: Cactus pear contains 180 to 300 mg/kg of vitamin C. This content is higher than that found in other common fruits like apple, banana, or grape [13]. It is a powerful antioxidant and hence is effective against the superoxide radical anion, hydrogen peroxide, the hydroxyl radical and singlet oxygen which could damage DNA, proteins and membranes. It is vital for absorption of available Iron in the food sources taken. It is vital for formation of collagen (intracellular cement substance), bones and healing wounds.

Vitamin E: Protects erythrocytes from haemolysis by production of oxidizing agents as dialuric acid and hydrogen peroxide.

Vitamin E also known tocopherol plays as an electron acceptor in the electron transport system and prevents disruption of Mitochondria. Reduces free radical generation and membrane damage. Because of its antioxidant function and its role in inhibiting cell proliferation of smooth muscles, vitamin E can be used for prevention/treatment of diseases.

Amino acid content in fruit juice of <i>O.ficus – indica</i> . Amino acid content expressed as g/100g	
Essential Amino Acid	Amount present in Prickly Pear fruit pulp
Arginine	1.11
Histidine	1.64
Isoleucine	1.13
Leucine	0.75
Lysine	0.63
Methionine	2.01
Pheylalanine	0.85
Threonine	0.48
Tryptophane	0.46
Valine	1.43
Vitamin content in fruit juice of <i>O.ficus – indica</i> . Vitamin content expressed as mg/100g	
Vitamin K1	53.2
Vitamin E	527.4
Ascorbic acid	34-40
Mineral content in fruit juice of <i>O.ficus – indica</i> . Mineral content expressed as mg/100g	
Calcium	27.6
Magnesium	27.7
Potassium	161
Iron	6.2

As per a research published by Ahmad A1, Davies J, Randall S, Skinner GR [12], An extract of the cactus plant *Opuntia* inhibited intracellular virus replication and inactivated extracellular virus. Inhibition of virus replication also occurred following pre-infection treatment--a favourable finding in terms of in-vivo limitation of virus disease. There was inhibition of both DNA and RNA virus replication, for example, herpes simplex virus, equine herpes virus, pseudorabies virus, influenza virus, respiratory syncytial virus

and human immunodeficiency virus, with normal protein synthesis in uninfected cells.

RESULT AND CONCLUSION

Hb+ is a product very rich in Ascorbic Acid, Vitamin E, Vitamin K, Iron and antioxidants like Betacyanin, betaxanthin, and also is a complete protein as it contains all the essential amino acids. Having considerable amount of dried stevia extract can provide virucidal properties against corona virus.

Hb+ being a natural product with no toxicology must be considered for detailed study and till then be used as natural health supplement to boost immunity.

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