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Mini Review

Underutilize Vegetables and its Medicinal Property in Indian Contest: A review

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Abstract

Bharat has wide biodiversity of vegetable and many are not being cultivated commercially in spite of their rich medicinal and nutritive value. Underutilize vegetables pose both protective and curative properties. Crops like Wax gourd (*Benincasa hispida*), Drumstick (*Moringa oleifera*), Basella (*Basella Alba, Basella rubra*), Alligator weed (*Alternenthera philoxeriodes*) etc. exhibit anti-inflammatory, anti-ulcer, anticonvulsant activities, anti-atherosclerotic, anti-inflammatory, anti-spasmodic, antihypertensive, anti-tumour, anti-oxidant, anti-pyretic, antiulcer, anti-epileptic etc. property. The chemical composition of the plant interacts with various pathways in the animal body by which it provides the therapeutic effect against various physiological and neurological diseases. Not only this, but it also prevents nephrotoxicity and oxidative impairments of the kidney induced by modern medicine. This review paper mainly emphasizes the medicinal value of few underutilize vegetable and its effect on the improvement of health.

Keywords: *Benincasa hispida; Moringa oleifera*; Property

Introduction

The world population is increasing as never before within the limited natural resource. As a result, malnutrition and other health related issues are severe in the various pocket of the world as well as in Bharat. Essential people are suffering from chronic and life-style diseases. With the change of time, we filled our food bucked with very limited crops belonging to cereal and other crop groups, as a result, many important species are left out of priority (Frison., *et al*. 2006). Horticulture plays an important role in providing nutritional security to the human being. Among these vegetables is an important source of vitamins, nutrients, antioxidants. Some of them are also a rich source of medicinal components essentially under underutilize vegetables. However, they have been ignored for years. But in Bharat, traditional a good number of the underutilized crop species are used in different (Sathiyaraj and Kumuthakalavalli, 2014). Tribal peoples know the medicinal property of such a crop which carries flowered generation to generation. Such vegetable crops viz. *Centella asiatica, Glinus oppositifolius, Leucas aspera, Trianthema portulacastrum, Enhydra fluctuans* etc. also being used day to day but they also use for therapeutic purpose (Pandey., *et al*. 2014). Moreover, some of the underutilized vegetables are reported to rich with anticancerous property (Rajsekaran., *et al*. 2014) haepatoprotective (Sharmila Banu., *et al*. 2009), anti-microbial (Doss, 2015; Srinivasan., *et al*. 2011), anti-inflamatory (Kaushik., *et al*. 2011) and many more. Many spices of Bharat include saffron, curcumin, pepper, zingiber, cinnamon etc. has been used for the treatment of hypercholesterolemic, cardiovascular disease, obesity, inflammation/metabolic disease, diabetes and Alzheimer's disease [1,2]. This review paper is mainly emphasizing the medicinal property of some underutilize vegetable.

Drumstick *(Moringa oleifera)*

Fruit, leaves and flowers are edible for this crop. It is claimed that it is the most nutritious plant yet discovered (Khawaja., *et al*. 2010). It exhibit anti-inflammatory, anti-ulcer, anticonvulsant ac-

tivities, anti-atherosclerotic, anti-inflammatory, anti-spasmodic, antihypertensive, anti-tumour, anti-oxidant, anti-pyretic, antiulcer, anti-epileptic, diuretic, cholesterol lowering, renal and anti-diabetic, (Chumark., *et al*. 2008, Sharma *et al*. 2012). Drumstick is also effective to cure skin infections, anaemia, bronchitis, anxiety, asthma, chest congestion, blackheads, blood impurities, catarrh, cholera and many other illnesses (Khawaja., *et al*. 2010; Singh., *et al*. 2012). The leaf is very effective to maintain the high blood pressure. Consumption of high-fat diet (HFD) is become a part of daily life which induces nonalcoholic fatty liver disease (NAFLD) as a result different physiological complicity appear. But leaf of Moringa oleifera having the property to protected HFD-induced liver damage [3]. Moringa leaves also Prevent Hepatic Lipid Accumulation in the liver by affecting the affecting gene expression of hepatic lipids synthesis gene resulting in lower concentrations of cholesterol and triglycerides. This medicinal leaves are also reduce the inflammation in the liver [4].

Alligator weed *(Alternenthera philoxeriodes)*

It is an aquatic plant with various medicinal property, this plant is a good source of calcium, potassium, iron, different sterol and also dietary fiber. It is used as leafy vegetables contains different chemical compound like oleanolic acid, 7α-L-rhamnosyl-6-methoxy-luteolin, oleanolic acid-3-O-β-D-glucoside, ribose and saponin components of rhamnose. Stem leaves contain alternanthin, β-sitosterol, stearic acid etc. (Tanveer., *et al*. 2013). It beloved to have anti-viral, antibacterial, and haepato-protective property. It is very helpful in, hematuria, cold and pyrexia, measles, coughing up blood encephalitis B, etc. this plant also used against venomous snake bite.

Basella *(Basella Alba, Basella rubra)*

Both the leaf and stem are edible and a good source of nutrient including A, C, B, Ca, Mg, Fe and antioxidants. It is two type Viz. Basella Alba which is green in nature and Basella rubra with purplish to pink veins (Cook, 2010). Basella rubra contain a good amount of anthocianin which believe to be a strong antioxidant [5]. The plant exhibit androgenic, anti-diabetic, anti-inflammatory, anti-microbial, antioxidant, anticancer, antiviral, CNS depressant, haepato protective (Gupta., *et al*. 2008 and Saleem., *et al*. 2001).

Elephant foot yam *(Amorphophallus campanulatus)*

Economical part of the crop is corm and it is widely used in ayurvedic medicine system for treating various human diseases and disorder. The corms have antihelmintic and aphrodisiac property. However, it also useful in inflammations, haemorrhages, elephantiasis, haemorrhoids, amenorrhoea, dysentery, splenopathy, seminal weakness, fatigue, anaemia etc. (Jain., *et al*. 2009, Ramalingam., *et al*. 2010). The corms contain salviasperanol and amblyone which possess antibacterial, antifungal and cytotoxic activities (Anonymous 1985). Nevertheless, it is a remedy for asthma, rheumatism piles, abdominal disorders, and tumours (Kirtikar and Basu, 1989).

Water Cress *(Enhydra fluctuans)*

In Bharat, the *Enhydra fluctuans* is commonly known as Helencha. This herb grows in marshland as well on water. The stem and the leaf is edible. The plant is rich in β-carotene and also contain a good amount of protein. The plant antidiabatic, antimicrobial, anti-inflamatory, antioxidant, anticancerous, haepatoprotective, neuroprotective and analgesic property for its rich therapeutic component like saponins, myricyl alcohol, kaurol, cholesterol, sitosterol, glucoside, stigmasterol, cholesterol, sitosterol, glucoside etc. the green Leaves of the plant have laxative property and also useful in liver disorders, skin and neurological issue (Sarma., *et al*. 2014).

Red amaranth *(Amaranthus cruentus)*

All part of this crop having therapeutic value. Roots when boiled with honey act as a laxative. The ash of the stems is also used for wound dressing [6]. Traditionally the heated leaves are used to manage tumours. It is helpful in constipation, fever, haemorrhage, anaemia, kidney problem (Mathur., *et al*. 2010 and Choudhury, 2012). The plant is good for diabetic patients and also used as a anti-snake venom. Antipyretic and antileprotic propery also reported in this crop [7]. Appert from this, the plant provides various nutrients like iron, calcium, magnesium, niacin, riboflavin, phytin, tannin etc. along with many antioxidants which help the body to stay healthy (Fernand., *et al*. 2012).

Purslane *(Portulaca oleracea)*

Though in many parts of the country Purslane (*Portulaca oleracea* L.) considered as a weed but deserves special attention for its nutritional value and therapeutic content. Three types of purslane have been reported namely, the green, golden, and a large-leaved golden variety [8,9]. Leaf and stem are edible consumed as a vegetable in many pockets of Bharat. It contains various vitamins and minerals like riboflavin, niacin, and pyridoxine, potassium, magnesium, calcium, phosphorus, and iron. But essentially it contains

Omega-3 Fatty acid as a result of cholesterol and triglyceride levels lower down high density lipoprotein rises. It also helps to treat vascular diseases by decreasing the thickness of the blood [3]. Antioxidant such as GPx, GR, SOD, and GST are reported in the plant which helps to maintain glutathione homeostasis in tissues [10]. The plant is a potential cancer inhibitor as it contains a considerable amount of Vitamin C (ascorbic acid) and beta-carotene which have been reported to have antioxidant activity, because of their ability to neutralize free radicals [11].

Sweet gourd *(Momordica cochinchinesis)*

It is a dioecious plant and the fruit is edible. The sweet gourd is popular in North Eastern Bharat. The seed of the *M. cochinchinensis* has many therapeutic properties like relieving muscle pain, rheumatic pain, hemorrhoids, bruises etc. [12,13]. It also reported that Momordica possess antioxidant effects [14], improve the immune response (Xiao., *et al*. 2007), and anti-ulcer property [15]. In a recent study, it was observed that the seed is very effective to reduce the proliferation of human lung cancer cell [16] and also help to reduce the degeneration of kidney cells because of the presence of saponins [17].

Wax gourd *(Benincasa hispida)*

The Wax gourd is a underutilize vegetable in Bharat and mainly grown in some pocket of north- eastern Bharat. Tender and mature both kinds of fruit are edible. Mature fruits having a very long post-harvest life. The Fruits of the plant is very nutritious and have an endless medicinal property and used as a laxative, diuretic, aphrodisiac, cardiotonic, urinary calculi, blood disease, insanity, epilepsy, schizophrenia and many other psychologic disorders [18,19]. The *Benincasa hispida* fruits are rich in volatile oils, flavonoids, sacchrides, glycosides, proteins, vitamins, carotenes, minerals, ß-sitosterin and uronic acid [20-22].

Fruit of this plant also affect the central nervous. It inhibits MAO-A, and also interact with dopaminergic, α1- adrenergic, serotoninergic, and GABAergic systems by which it expresses antidepressant-like activity [23]. The juice of the fruit helps to ride off the morphine addiction and manage the colchicines-induced rat model of Alzheimer's disease considerably [24,25]. The seed and the peel have anti-gastric ulcer and anthelmintic activity respectively [26,27]. Fruit rind extract (outer thick pericarp) has various effects on the renal system. The study revealed that the extract of Fruit rind increases the urinary volume, sodium and chloride excretion and a decrease in the potassium excretion [19]. Apart from this, it prevented the paracetamol - induced nephrotoxicity and oxidative impairments of the kidney, reduced in kidney weight, blood urea, blood creatinine, urinary glucose etc. [28]. Interestingly, It posses nephroprotective activity against mercury poisoning [29].

An antimicrobial effect of this plant was also reported against various pathogens like *B. subtilis, Micrococcus luteus, Candida albicans* etc. but was very effective against Candida albicans [30,31].

Tree bean *(Parkia roxburghii)*

It is a perennial tree and pods, as well as flowers, are edible. The fruits are popularly known as Yongchak in the North East Bharat. Pods of *P roxburghii* have the potential to manage various diseases like kidney disorder, urinary tract infection, diabetes, hypertension, headache etc [32,33]. Apart from these it also possesses anticancer [34], antioxidant [35] and antimutagenic [36] property. Antimicrobial effect of the pods extract was reported against various microorganisms [37].

Conclusion

Now a day's human population is facing various health issues, including lifestyle diseases, physiological and pathological. To overcome such health problem modern medicines are being used heavily which has its own side effect. Underutilize vegetables like Wax gourd (*Benincasa hispida*), Drumstick (*Moringa oleifera*), Basella (*Basella Alba, Basella rubra*), Alligator weed (*Alternenthera philoxeriodes*) etc. exhibit protective and curative property. Many of them even have the property to neutralize the side effect of the modern medicine. Hence, they should be popularized and our food bucket should be enriched with such crops. Encouragement for the systematic cultivation of such crop is required to overcome the health issue and also to boost the economy of the country.

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