



Amla (*Emblica officinalis*): Medicinal food and pharmacological activity

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Abstract

Emblica officinalis is a natural, efficacious antioxidant with the richest natural source of Vitamin C (200-900 mg per 100 g of edible portion). Numerous studies conducted on *Emblica officinalis* fruit suggest that it has anti-viral properties and also functions as an anti-bacterial and anti-fungal agent. The gelatinous plum-sized Amla fruit contains naturally occurring vitamin, heat stable vitamin C. A clinical study on patients with pulmonary tuberculosis showed that the vitamin C contained in *Emblica officinalis* was better assimilated than synthetic vitamin C. Further research of contemporary and traditional medical literature indicates that *Emblica officinalis* either in combination with other herbs or alone has been useful in the amelioration of colds, warts, skin afflictions, influenza, anemia, diabetes, lung conditions, elevated cholesterol and as an immune restorative in cancer conditions. It is one of the best natural anti-ageing remedies. *Emblica officinalis* is amazingly effective natural anti-ageing product. *Emblica officinalis* is very effective in treatment of acidity and peptic ulcers. *Emblica officinalis* is rich in Vitamin C, Calcium, Iron, essential amino acids and many other vitamins and minerals and anti-oxidants. Regular use of *Emblica officinalis* improves immunity, fight against cancers, chronic diseases like hypertension, high Cholesterol, Diabetes, influenza, Chronic cough and cold, Chronic infections, Chronic fatigue and Chronic inflammatory conditions. Ayurveda describes it as one of the best herbs for Diabetes, bleeding disorders, strength and stamina promoter.

Keywords: *emblica officinalis*, diseases, medicinal food and pharmacological activity

Introduction

The Amla berry (*Emblica officinalis*) is a traditional food and medicine that inspires us in the mind of the serious herbalist due to its many known nutritional and medicinal benefits and uses. In India it is common to eat gooseberries steeped in salt water and turmeric to make the sour fruits palatable. There are two varieties of Amla - cultivated (gramya) and wild (vanya). The wild amla is small while cultivated amla is big, smooth and juicy. Chemical composition of the amla fruit contains more than 80% of water. It also has protein, carbohydrate, fiber and mineral and also contains gallic acid which is a potent polyphenol. Vitamin C is important for human beings. It is necessary for the synthesis of the inter-cellular cementing substance which is responsible for keeping the cells of the body together. The amla fruit is reported to contain nearly 20 times as much vitamin C as orange juice. The edible amla fruit tissue has 3 times the protein concentration and 160 times the ascorbic acid concentration of an apple. The fruit also contains higher concentration of most minerals and amino acids than apples. Amla fruit ash contains chromium, Zinc and copper. It is considered as adaptogenic that improves immunity. The tree is small to medium sized reaching 8 to 18 m in height with a crooked trunk and spreading branches. The branchlets are glabrous or finely pubescent 10-20 cm long usually deciduous. The leaves simple, sub sessile and closely set along branchlets, light green, resembling pinnate leaves. The flowers are greenish-yellow. The fruit is nearly spherical, light greenish yellow, quite smooth and hard on appearance with 6 vertical stripes or furrows. Ripening in autumn the berries are

harvested by hand after climbing to upper branches bearing the fruits. The taste of Indian gooseberry is sour, bitter and astringent and is quite fibrous.

Pharmacology and Clinical Studies

Phyllembin is isolated from the ethanolic extract of the fruit pulp has been found to potentiate the action of adrenaline in vitro and in vivo. It showed a mild action.

Emblica officinalis

Depressant action on Central Nervous System and also has a spasmolytic activity. The drug also revealed mild stimulant action on isolated frog heart, short and insignificant rise in cat's blood pressure, contraction of the nictitating membrane the reduction of outflow of the perfusate in the hind limb of the rat and ear of rabbit, mild cerebral depressant action and anti-spasmodic activity of the indirect actions, potentiation of the action of adrenaline on the blood pressure of cat, isolated frog heart and nictitating membrane of cat and the prolongation of the hypnosis were observed. Further studies on the action of phyllembin revealed that the drug antagonized the spasmogenic effect of acetylcholine, bradykinin and serotonin on the guinea pig ileum. It also antagonized serotonin and acetylcholine-induced contractions of oestrogenised rat uterus. It increased the amplitude of cardiac contraction and heart rate transiently. An increase in coronary flow was followed by persistent decrease. On perfused rat hind limb and rabbit ear preparation, phyllembin in small doses increased the amount of perfusate whereas in

larger doses it decreased the flow significantly. A triphasic response that is initial transient rise followed by a transient fall and then sustained rise in blood pressure was seen in anaesthetized albino rats. The sustained rise was blocked by phentolamine (1mg/kg.). The drug produced 80 percent protection against leptazol seizures in mice. It protected effectively against tremors and clonic and tonic convulsions induced by nicotine. It also antagonized tremorine-induced tremors and other cholinergic symptoms. The ether extract and 80 percent alcoholic extract of fruits acidified with hydrochloric acid were found to have antibacterial activity. The other extract of acidified alcoholic extract showed the highest activity inhibiting the growth of *M. pyogenes*, *S. typhosa* and *S. paratyphi* at a concentration of 0.21mg/ml and that of *M. pyogenes*, *S. schottmellari* and *S. dysenteriae* at a concentration of 0.42mg/ml³. The effect of crude amla (traditionally known as amalaki rasayana) on total serum protein and its fractions was studied in rabbits. The drug had no significant effect on the levels of serum protein fractions but it raised the total protein level and increased the body weight. The studies indicated that the increase in the body weight was due to positive nitrogen balance. The drug was found to have only anabolic effect without affording resistance against diseases.

Clinical studies were conducted to investigate the effect of crude amla in gastritis syndrome. The crude amla was given in 20 cases in a dose of 3 gms 3 times a day for 7 days. The drug was found effective in 85% of the cases. It was observed that the drug did not have any significant beneficial effect in cases of hypochlorhydria only cases of hyperchloridia with burning sensation in abdominal and cardiac regions and epigastric pain were benefited. Alcoholic extract of a plant (1g/kg) has shown an increase in the cardiac glycogen and a decrease in serum GOT, GPT and LDH in isoproterenol pretreated rats suggesting a cardioprotective action. It showed a reduction in serum cholesterol levels and a significant antiatherogenic effect. This study suggest that Vitamin C content alone may not responsible for the antiatherogenic effect of the animals. The lipid lowering and antiatherosclerotic effects of amla fresh juice were evaluated in cholesterol fed rabbits (rendered hyperlipidemic by atherogenic diet and cholesterol feeding). Amla fresh juice was administered at a dose of 5 ml/kg body weight per rabbit per day for sixty days. Serum cholesterol, Triglycerides, phospholipid and Low-density lipoprotein levels were lowered by 82%, 66%, 77% and 90% respectively. Similarly the tissue lipid level showed a significant reduction following amla juice administration. Aortic plaques were regressed. Amla juice treated rabbits exerted more cholesterol and phospholipids, suggesting that the mode of absorption be affected. Amla juice is an effective hypolipidemic agent and can be used as a pharmaceutical tool in hyperlipidemic subjects. It is reported to have anti-cancer properties. The crude extract of *Emblca officinalis* was reported to counteract hepatotoxic and renotoxic effects of metals due to anti-oxidant activity. Anti-oxidant of the fruit extract is demonstrated in sever

Nutritive value

Amla is well known for its nutritional qualities. It is rich in

polyphenols, minerals and is regarded as one of the richest source of vitamin C (200-900 mg per 100 g of edible portion). Major components of nutritional importance are reported in table 1.

Table 1

Chemical constituents	Percentage (%)
Carbohydrate	14.1
Proteins	0.5
Fat	0.1
Fibers	3.7
Mineral matter	0.7
Calcium	0.05
Phosphorus	0.02
Iron	1.5 mg/100g
Vitamin c	600 mg/ 100 g
Nicotinic acid	0.2 mg/100 g
Moisture	81.2

Table 2: Medicinal Importance of *Emblca officinalis*

S. No	Medicinal Activities
1	Anti-oxidants
2	Anti-tumor activity
3	Anti-ulcer activity
4	Hypo lipidemic activity
5	Immunomodulatory activity
6	Analgesic activity
7	Hepatoprotective activity
8	Anti-inflammatory activity
9	Gastoprotective activity
10	Anti-microbial activity

Healing options

- Amla protects cells against free radical damage and provides antioxidant protection
- Amla is used to treat skin disorders, respiratory infections and premature aging
- Amla is useful in hemorrhage, diarrhea, dysentery and has therapeutic value in treating diabetes can be taken in doses of one teaspoon thrice daily with milk

Ageing

Indian gooseberry has revitalizing effects as it contains an element which is very valuable in preventing ageing and in maintaining strength in old age. It improves body resistance and protect the body against infection. It strengthens the heart, hair and different gland in the body

Scurvy

As an extremely rich source of vitamin C. Indian gooseberry is one of the best remedies for scurvy. Powder of dry gooseberry mixed with equal quantity of sugar should be taken in doses of one teaspoonful three times daily with milk.

Natural Cure for Anemia

Amla is rich in Vitamin C or ascorbic acid an essential ingredient that helps in the absorption of Iron. Supplements of Amla can be very beneficial to patients suffering from Iron deficiency Anaemia

For diarrhea of children

A compound powder of the emblic seed, Chitrak root, chebulicmyrobalan, pippli and pallone is given in suitable doses according to age with warm water twice daily morning and at bed time. Tender shoots given in butter-milk cure indigestion and diarrhea green fresh leaves combined with curds have a similar effect. Leaves are used as infusion with fenugreek seeds in chronic dysentery and as a bitter tonic. Soak one tola of the seeds in a tinned vessel during the night grind it. Add cow's milk and take. This is a good remedy for biliousness.

Other uses

It helps in regulating blood sugar. It is very powerful anti-inflammatory herb a wonderful antioxidant and a natural Source of Vitamin C. Amla helps scavenge free radicals. Amla is powerful food for the brain. Studies show that Amla helps lower cholesterol. Amla also helps maintain the functioning of the liver, increases hemoglobin, red blood cell count. It is useful for Cough, Bronchitis and Asthma. Amla cleanses the mouth, strengthens the teeth. Its decoction is used in hyperacidity and with honey as an anthelmintic. The presence of Amla results in an enhanced cell survival, decreased free radical production and higher antioxidant levels. There are various classic

Ayurvedic preparations such as Chyawanprash in which Amla is used as a chief ingredient. It help improve intelligence and memory power. Triphala and Brahm rasayana are other classic medicine in which Amla is being used since time immemorial

Conclusion

Amla is one of the richest natural sources of vitamin C its fresh juice containing nearly twenty times as much vitamin C as orange juice. A single tiny Amla is equivalent in vitamin C content to two oranges. Clinical tests on patients suffering from pulmonary tuberculosis have shown that this high concentrate is more quickly assimilated than the synthetic vitamin. It is an ingredient of many Ayurvedic medicines and tonics as it removes excessive salivation, nausea, vomiting, giddiness, spermatorrhoea, internal body heat and menstrual disorders. Because it is also cooling it increases sattwa and is an excellent liver tonic. Research has been done with amla evaluating its role as an antioxidant in ulcer prevention for people with diabetes for mental and memory effects and its anti-inflammatory benefits. Amla extract supplements be helpful in those undergoing radiation therapy or would it also protect the cancer cells that the radiation is trying to destroy. Amla Tonic has a haematinic and lipolytic function useful in Scurvy and Jaundice prevents Indigestion and controls acidity as well as it is a natural source of anti-ageing.

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