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AMLA: A TRADITIONAL MEDICINE WITH MODERN SCIENTIFIC VALIDATION

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ABSTRACT:

Indian gooseberry (Emblica officinalis), a revered Ayurvedic plant, has been used for centuries to promote overall health and well-being. Rich in vitamins, minerals, and antioxidants, Amla exhibits numerous medicinal properties. This review comprehensively explores Amla's botanical description, chemical constituents, medicinal properties, traditional uses, and therapeutic applications. Amla's antioxidant, anti-inflammatory, and immune-boosting activities are highlighted, along with its potential in preventing and managing diseases such as diabetes, cardiovascular disorders, and cancer. The review underscores Amla's significance as a valuable medicinal resource, warranting further research and clinical applications. Its safety profile, cultivation, and availability are also addressed. The fruit is valued in Unani and Indian holistic medicine system for its tremendous medicinal properties. The vitamin C content of amla is highest than oranges and tangerines. Moreover, amla fruit contains high levels of calcium followed by phosphorus, iron and magnesium. Some trace elements of therapeutic importance in amla are manganese, cobalt and chromium. Traditionally, the juice of the fruit is being used for the treatment of tuberculosis of lungs, asthma, bronchitis, conjunctivitis and glaucoma. In addition, the fruit is used as an anti scorbutic, diuretic and laxative, hence used for treating common cold, gastric troubles, acidity and scurvy, dysentery and bronchitis, diabetes, diarrhea, jaundice and dyspepsia, coughs, headache, ophthalmic disorders, colic, flatulence, skin diseases, leprosy and grayness of hair. Moreover, several studies have confirmed protective effect of amla against heart (cardio protective effects), lungs, gastric lining and kidney (hepatoprotective effects).

Keywords: Indian gooseberry, Amla, Emblica officinalis, Ayurveda, medicinal plant,antioxidant, anti-inflammatory.

Introduction:

The kingdom of Indian gooseberry (Amla) is:
Plantae More specifically:
Kingdom: Plantae
Phylum: Angiospermophyta
Class: Magnoliopsida
Order: Geraniales
Family: Phyllanthaceae
Genus: Emblica
Species: E. officinalis

History and Cultural Significance:

Amla's history dates back to ancient India, where it was mentioned in the Rigveda, one of the oldest Hindu scriptures. The plant was revered for its medicinal and spiritual properties, earning it a sacred status in Hinduism. In Ayurveda, Amla is considered a "Rasayana" herb, believed to rejuvenate and revitalize the body.

Botanical Description:

Amla is a small, deciduous tree belonging to the Euphorbiaceae family. It grows up to 30 feet tall, with a broad, rounded crown and dark green leaves. The fruit is small, Greenish-yellow, and spherical, with a single seed.

Chemical Constituents:

Amla's medicinal properties can be attributed to its rich chemical constituents including:
1. Vitamin C (ascorbic acid)
2. Tannins (emblicol, punicalagin)
3. Flavonoids (quercetin, kaempferol)
4. Alkaloids (embelin)

5. Minerals (iron, calcium, phosphorus)

Medicinal Properties:

Amla's medicinal properties have been extensively studied, revealing its:
1. Antioxidant activity
2. Anti-inflammatory effects
3. Immune-boosting properties
4. Antidiabetic potential
5. Cardiovascular health benefits
6. Anticancer properties
7. Neuroprotective effects
8. Radio protective properties

Fig no.1 Fruits of Amla

Traditional Uses:

Amla has been used in various traditional medicine systems, including Ayurveda, Unani, and Homeopathy. Its uses range from:
1. Hair and skin care
2. Digestive health
3. Respiratory issues
4. Eye care
5. Menstrual health

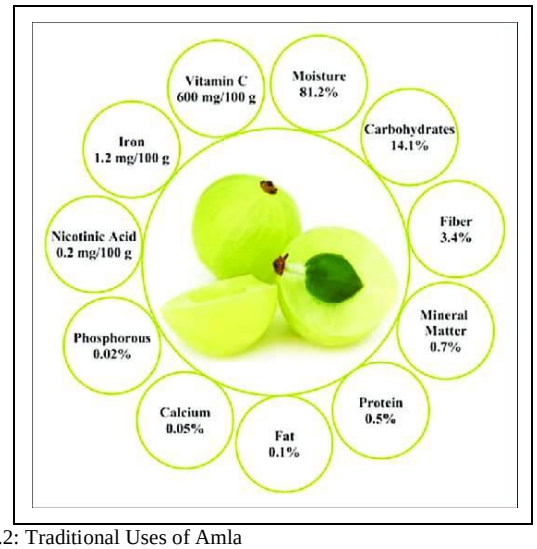

Fig no.2: Traditional Uses of Amla

Modern Research :

Recent studies have validated Amla's traditional uses, highlighting its potential in:
1. Cancer prevention
2. Diabetes management
3. Cardiovascular health
4. Neuroprotection
5. Radioprotection

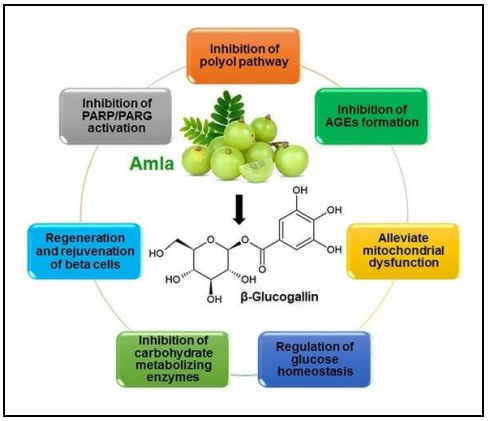

Fig no 3: Modern Research of Amla

Origin and Habitat

Amla or India gooseberry (Emblica officinalis Gaertn. Syn. Phyllanthus emblica) is the most important fruit crop of Indian subcontinent that has been valued in Unaniand Indian holistic medicine system for its tremendous medicinal properties. Anolabelongs to genus Emblica and family Euphorbiaceae. It is also known as "wonderfruit" of the twenty-first century.Amla or Anola tree is indigenous to India, Southest Asia, Sri Lanka, Bangladesh and South east China. It is a tropical deciduous plant widely distributed in countries like Iran, Iraq, West Indies, Cuba, Sri Lanka, Florida, Pakistan and Cuba. In India, amla grows naturally from northwest Himalayan regions like J&K, Himachal Pradesh, Uttranchal to eastern regions like Assam, Manipur, Tripura and Meghalaya. Amla is widely domesticated in states like Uttar Pradesh, Madhya Pradesh, Haryana, Karnataka and Tamil Naidu. India is the largest Anola producing nation of the world. UP, MP, TN and Gujarat are the largest producer of Indian gooseberry in the country (Wali et al., 2015). Amla is a deciduous tree which grows well in tropical and dry sub tropical climate bearing fruit up to 60–70 years. Amla cultivation requires light or slightly heavy soil of alkaline pH (6.5–9.5). Sandy soils and heavy soils are not ideal for its cultivation. Amla trees can withstand temperature of 45 ℃ and successful cultivation depends on average annual rainfall of 640–800 mm. Amla tree needs warm climatic conditions for setting up fruit growth (Pareek, 2011).During the initiation of growth, the plant should not be exposed to hot winds in summers and frost during winters. Amla propagation is done practically by budding. Seedlings that are one-year old are budded in the month of July for raising new plants. Amla plants thrive well under moist soils and sufficient atmospheric humidity so; the planting practice is done during the rainy season. Harvesting is done usually from November to February when the fruit has changed colour from faintly green to yellow. Seed colour changes to brown from white which indicates fruit maturity besides mature fruits are hard to touch. Mature fruit weigh 50–60 g.

Health Benefits:

The fruit is used as an anti scorbutic, diuretic and laxative, hence used for Treating common cold, gastric troubles, acidity and scurvy, dysentery and bronchitis, diabetes, diarrhea, jaundice and dyspepsia and coughs, asthma, headache, ophthalmic disorders, colic, flatulence, skin diseases, leprosy, and grayness of hair, etc. (Tandonet al., 2003). This fruit is extensively used in the preparation of Ayurvedic and Unani medicines like Chyavanprash, which promotes health and longevity. In traditional Indian medicine, both the dried as well as fresh fruit is used. Also, all parts of the plant are used in various Ayurvedic treatments. Some of the therapeutic Properties of fruit are:

Anti-oxidant

Amla extracts have strong antioxidant activity than synthetic antioxidants like BHA, quercetin. It is reported that antioxidant potential of amla fruit is two-fold higher than acai and 17 times higher than pomegranate. Such immense antioxidant potential of the fruit has been positively correlated with its phytochemical content particularly phenols and flavonoids (Yadav et al., 2014).Literature findings so far confirm that the fruit has free radical scavenging capacity including DPPH, superoxide, hydrogen peroxide, nitric oxideetc. but methanolic extracts have shown higher total antioxidant capacity than the aqueous extracts. The suggested mechanism behind the antioxidant activity of amla is that it enhances the activity of scavenging enzymes besides containing high levels of SOD enzyme, a free radical inhibiting enzyme. The presence of adequate amounts of vitamin C and tannins are also responsible for antioxidant action of amla fruit. Ellagic acid in Amlais a powerful antioxidant which is able to prevent chromosomal damage due to free radical stress (Kumaran & Karunakaran, 2006).

Anti-bacterial activity

Various aqueous extracts of amla have shown to inhibit the growth of many gram positive as well as gram-negative bacteria with MIC values of 13.97 mg/ml. The antimicrobial activity of amla is believed to be due to the adhesion inhibiting action of micro-organisms to epithelial cells and by denaturing the cell proteins thereby, decreasing the colony count (Saeed & Tariq, 2007).

Anti-carcinogenic activity

Amla can prevent the growth of cancer cells by exhibiting anti-proliferative activity. The beneficial effects against spread of tumour cells is due to promotion of natural killer (NK) cell functioning. Amla has significant anti-proliferative activity against gastric cancer, breast cancer, lung cancer and liver cancer. The compounds like is ocarilagin present in amla shows cancer-protective activity in case of lung cancer (Liu et al., 2008). In addition to this, ellagitannins, quercetin in amla also exhibits anti carcinogenicity due to modulation of endogenous defense mechanism in body.

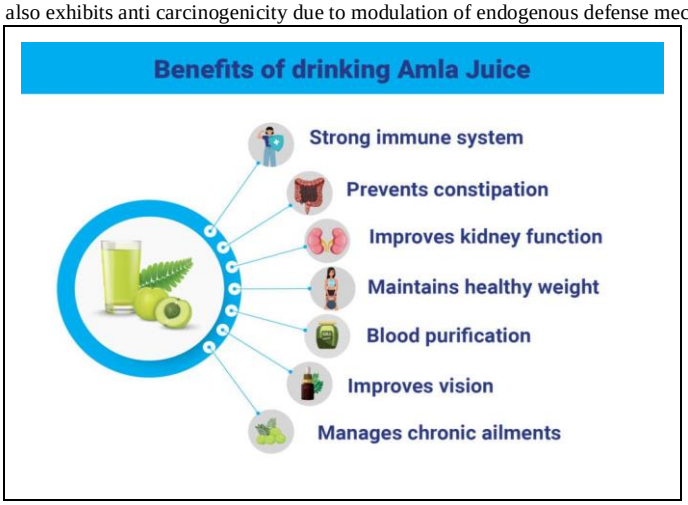

Fig no 4: Health Benefits of Amla

Conclusion:

Indian gooseberry (Amla) is a medicinal gem, offering numerous health benefits validated by modern research. Its antioxidant, anti-inflammatory, and immune boosting properties make it an invaluable resource for promoting overall well-being. Amla's versatility is evident in its applications across various disease categories, including chronic diseases, immune function, digestive health, and respiratory issues. The integration of Amla into modern medicine holds promise, particularly in complementary and alternative medicine, phyto therapy, and nutraceuticals. Future research should focus on clinical trials, standardization, and synergistic effects.

Policy implications include:

1. Inclusion in national healthcare programs.
2. Sustainable cultivation practices.
3. Regulation of Amla-based products.

Public health significance:

1. Affordable healthcare solutions.
2. Empowerment of traditional medicine practitioners.
3. Health awareness and education.

In conclusion, Amla's medicinal potential is undeniable. Its validation through modern research reaffirms Ayurveda's wisdom. Integrating Amla into modern medicine and promoting sustainable use will foster health, vitality, and longevity.

Recommendations:

1. Further research on clinical applications.
2. Standardization of Amla extracts.
3. Education and awareness campaigns.

By harnessing Amla's medicinal properties, we can promote holistic health and well being.

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