



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A PHARMACOLOGICAL REVIEW ON AMLA (EMBLICA)

Pawar Snehal S*.¹, Hole Bharati R.²,
Sathe Ganesh S.³, Dawane Kiran D.⁴, Dr. Umalkar Deepak G.⁵
Saikrupa Institute of Pharmacy Ghargaon.

ABSTRACT:

Medicinal plants are the precious gift of nature which plays vital role in healthcare sector. For developing nation and potent source of therapeutic molecules to heal various diseases. In the Amla (*Embllica officinalis* Gaertn.) is widely used in the Indian system of Medicine and believed to increase defense against diseases. It is a widely known fact that all parts of amla are useful for the treatment of various diseases. Among all, the most important part is fruit. Due to their strong antioxidant and biological properties, *Embllica officinalis* prevents innumerable health disorders related to oxidative stress, cardiovascular diseases, neurodegenerative diseases and cancer. Research reports on amla reveal its analgesic, anti-tussive, cardioprotective, cytoprotective, immunomodulatory, chemopreventive, antioxidant, memory enhancing, anticancer, antidiabetic and some other properties. In this article, we review the morphology, distribution, nutritional value, chemical constituents, medicinal uses of amla.

Keywords :

Phyllanthus emblica, Amla, Medicinal Herb, Nutritional Value, Chemical Constituents, Medicinal Uses, Ascorbic Acid, Disorders, Oxidative stress, Pharmacological Property.

Introduction. :

Medicinal plants are the most precious creation of nature which is the ultimate gift for all the creatures including mankind also. It plays a vital role for maintaining human health. According to WHO survey, 80% of the populations living in the developing countries rely almost exclusively on traditional medicine for their primary health care needs and play an important role in the health care system of remaining 20% of the population. Amla (Indian gooseberry) is a gift of nature to mankind. It is an indispensable part of the ayurvedic and unani system with amazing remedial qualities. *Phyllanthus emblica* fruit is one of the top-selling botanicals having diverse applications in healthcare, food and cosmetic industry. According to belief in ancient Indian

mythology, it is the first tree to be created in the universe. It is also used in “TRIPHALA” formulation. Triphala (tri = three and phala = fruits), is an ayurvedic preparation composed of three equal proportions of herbal fruits native to the Indian subcontinent.



They are: Terminalia chebula, Phyllanthus emblica, and Terminalia bellerica. Triphala is rich in polyphenols, vitamin C and flavonoids. Triphala is known to cure cataract and effective in the treatment of Acquired immune deficiency syndrome (AIDS). Evidence that the humble amla berry offers nearly legendary powers in healing and preventing atherosclerosis and related cardiovascular disease. The amla can make a landscape attractive ornamental tree, especially when it wears its pale green berries. Life is magic, the way nature works seems to be quite magical. Medicinal plants are the most precious creation of nature which is the ultimate gift for all the creatures includes mankind also. It plays a vital role for maintaining human health and provides a potent source of therapeutic molecules to heal various diseases all over the world. Our Indian traditional systems of medicine (like Ayurveda, Unani, Siddha) have abundant medicinal plants which are used from ancient times; herbs have been the original source for most of the drugs.

Methodology :

This study is a secondary research and secondary data has been used to conduct the study. Secondary data has been collected from different sources like reports of various organizations, various books, journals, newspaper and articles. Also vast data have been collected from various web links. By collecting various information we tried to write a summarized overview about Phyllanthus emblica (Amlaki).

Taxonomical Classification :

Kingdom : Plantae
 Division : Magnoliophyta
 Class : Magnoliopsida
 Subclass : Rosidae
 Order : Euphorbiales
 Family : Euphorbiaceae
 Genus : Phyllanthus L.
 Species : Phyllanthus Linn. Emblica



Medicinal Importance :

Traditional Uses in Ayurveda

The Amla fruit has these properties using the Ayurvedic Classifications: Rasa (taste): Sour and astringent are the most dominant, but The fruit has five tastes including sweet, bitter, and pungent. Veerya (nature): Cooling, it uses in treatment of burning Sensation in inflammation and fever which are considered to Be manifestations of pitta (fire) agitation. Vipaka (taste developed through digestion): Sweet. Guna (qualities): Light, dry. Doshas (effect on humors): Quietens all three doshas: vata, Kapha, pitta, and is especially effective for pitta. Due to its cooling nature, amla is a common ingredient in Treatments for a burning sensation anywhere in the body and For many types of inflammation and fever; these are Manifestations of pitta (fire) agitation. Amla or Amlaki has Been considered the best of the Ayurvedic rejuvenative herbs. It has a natural balance of tastes (sweet, sour, pungent, bitter And astringent) all in one fruit, so, stimulans the brain to Rebalance the three main components of all physiological Functions, the water, fire, and air elements within the body. In traditional folk medicine, the fruits exert several Beneficial effects include cooling, ophthalmic, carminative, Digestive, stomachic, laxative, dyspepsia, rejuvenative, Diuretic, antipyretic and tonic. They are also useful in diabetes, Cough, asthma, bronchitis, dyspepsia, flatulence, peptic ulcer, Skin diseases, leprosy, inflammations, diarrhoea, haemorrhages, cardiac disorders, hair tonic and some other Disease conditions.

Acts as an Antioxidant, a Potent Source of Vitamin C :

And Used To Prevent Scurvy and Jaundice The Amla is a rich source of vitamin C and low molecular Weight hydrolysable tannins. For this amla is a good source of Antioxidant. The Vitamin C is bonded with tannins that protect It from being destroyed by heat or light. The research studies shown that amla preparations Contained high levels of the free-radical scavenger, superoxide Dimutase (SOD) in the experimental subjects. Amla reduced UV-induced erythema and showed free-radical quenching Ability, chelating ability to iron and copper as well as MMP-1 And MMP3 inhibitory activity. Ellagic acid, as a powerful antioxidant present in amla has The ability to inhibit mutations in genes and repairs the Chromosomal abnormalities. Amla or Indian gooseberry is one of the best remedy for Scurvy as it is an extremely rich source of vitamin C. Oral administration of powder of the dry herb, mixed with An equal quantity of sugar, 3 times a day with milk can prevent Scurvy. Drinking amla juice early in the morning with an empty Stomach is a natural tonic prevent outbreak of scurvy and Jaundice.

Memory Enhancing and Antidepressant Activity :

Amla-Berry is good for the brain. It is supportive for the Mind and enhance coordination. It sharpen the intellect and Helps in mental functioning. It supports the nervous system And strengthens the senses. P. emblica is traditionally used to treat disorders of the Central nervous system (CNS). Powder of amla produced a Dose-dependent improvement in memory of young and aged Rats. It reversed the amnesia induced by scopolamine and Diazepam. Powder of amla may prove to be a useful remedy For the management of Alzheimer's disease due to its Beneficial effects on memory improvement and reversal of Memory deficits. A test on Albino mice confirmed the antidepressant action Of amla as comparable to usual antidepressant drugs.

Cardioprotective Activity, Hepatoprotective Activity, Anti-inflammatory, Antipyretic and Analgesic Effects, Hypo-cholesterolemic and Hypo-lipidemic Properties :

It supports the heart, blood and circulation. It protects the Cardiovascular system and sometimes acts as cardiac Stimulant. Research shows that, Amla helps to lower Cholesterol level and protect heart from diseases. Various Studies shown that, Ischaemia-reperfusion injury (IRI), occur Due to oxidative stress can be treated with amla fruit as fruit

Synonyms :

Cicca emblica (L.) ,Kurz ,Diasperus emblica (L.), Hance Emblica arborea RRox,
Emblica officinalis Gaertn., Phyllanthus glomeratus Roxb., Phyllanthus mairei H. Lév. Phyllanthus mimosifolius Salisb., Phyllanthus taxifolius D. Don .
Amla: Pharmacological actions and therapeutic

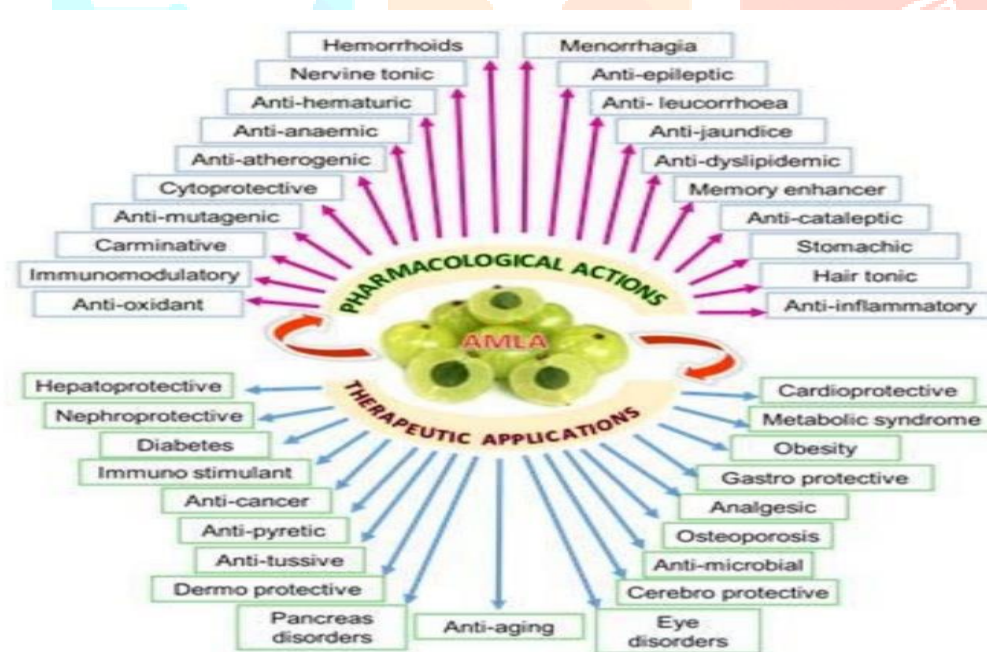


Figure 3: Amla: Pharmacological actions and therapeutic applications

PHARMACOLOGICAL ACTIVITIES AND MECHANISMS : Alteration in basic homeostatic balance of the body is the Origin of disease. Imbalance between pro-oxidant and Anti-oxidant homeostasis place a major role in majority of Ailments. Pro-oxidant condition dominates either due to Increased generation of free radicals and/or their poor Quenching/scavenging by the antioxidants (which Protects the body against the deleterious effects of freeRadicals).^{18, 37} Amla is one of the richest sources of vitamin-C and low Molecular weight hydrolysable tannins which makes Amla A good antioxidant. The tannins of amla like emblicanin-A (37%), emblicanin-B (33%), punigluconin and Pedunculagin are reported to provide protection against Oxygen radical included haemolysis of rat peripheral Blood erythrocytes.³⁸ The mechanism behind antioxidant Activity is due to the recycling of sugar moiety and Conversion of the polyphenol into medium and high Molecular weight tannins. The powerful antioxidant Ellagic acid, present in Amla, can inhibit mutations in Genes and repairs the chromosomal abnormalities.³⁹ Amla inhibits the growth and spread of various cancers Like breast, uterus, pancreas, stomach and liver cancers.

TRADITIONAL USES

Ayurveda, Siddha, Unani systems of India, Tibetan, Sri Lankan and Chinese systems of medicine utilizes Amla for A variety of ailments. It is considered as rasayana(rejuvenator)⁴ And used in delaying the degenerative and Senescence related processes. In folk medicine, the fruits, which are sour, astringent, Bitter, acid, sweet and anodyne. Exert several beneficial Effects include cooling, ophthalmic, carminative, Digestive, stomachic, laxative, dyspepsia, aphrodisiac, Rejuvenative, diuretic, antipyretic and tonic. They are Useful in vitiated conditions of tridosha, diabetes, cough, Asthma, bronchitis, cephalalgia, ophthalmopathy, Dyspepsia, colic, flatulence, hyperacidity, peptic ulcer, Erysipelas, skin diseases, leprosy, haematogenesis, Inflammations, anaemia, emaciation, hepatopathy, Jaundice, diarrhoea, dysentery, haemorrhages, Leucorrhoea, menorrhagia, cardiac disorders, intermittent Fevers and premature greying of hair (Hair tonic).²⁸ Amla Is also stated to have hepato, cardio, nephro and Neuroprotective effects; antioxidant, anti-inflammatory, Analgesic, antipyretic and restorative properties.

CHEMICAL CONSTITUENTS

Amla is one of the most extensively studied plants. Reports suggest that it contains tannins, alkaloids and Phenols.³ Fruits have 28% of the total tannins distributed In the whole plant. The fruit contains two hydrolysable Tannins Emblicanin A and B,²¹ which have antioxidant Properties; one on hydrolysis gives gallic acid, ellagic acid And glucose wherein the other gives ellagic acid and Glucose respectively

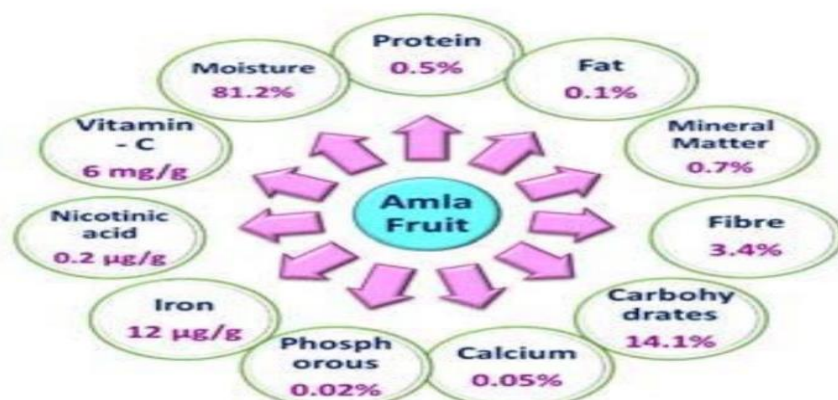


Figure 1: Amla fruit pulp: Composition

CONCLUSION

Now a days, research on Indian traditional medicinal Plants has gained a new recommence. Although, the Other systems of medicine are effective they come with a Number of undesired effects that often lead to serious Complications. Being natural, herbal medicine alleviates All these problems. Emblica officinalis (Amla) has an Important position in Ayurveda- an Indian indigenous System of medicine. Amla due to its strong antioxidant And biological properties prevent innumerable health Disorders as it contains essential nutrients and highest Amount of vitamin C. It can be used as a possible food Additive or in nutraceuticals and biopharmaceutical Industries. Several researchers revealed that various Extracts and herbal formulations of amla showed Potential therapeutic benefits against various diseases And the results are similar to standard drugs. In this Review, we tried to make a summary the traditional and Scientifically proven uses of amla and tried to establish Their basic mechanisms. Even though, amla has various Medicinal properties since ages, there is a colossal Necessity to scientifically explore and evident its Medicinal values at molecular level with help of various Latest biotechnological tools and techniques.

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