



## EMBLICA OFFICINALIS – THE WONDER OF AYURVEDIC MEDICINE

**Bharambe Swati Vasant\*<sup>1</sup>, Darekar Avinash Bhaskarrao<sup>1</sup>, Saudagar Ravindra Bhanudas<sup>2</sup>**

\*<sup>1</sup>Department of Pharmaceutics, KCT's RGS College of Pharmacy, Anjeneri, Nashik, 422 213. Maharashtra, India.

<sup>2</sup>Department of Pharmaceutical Chemistry, KCT's RGS College of Pharmacy, Anjeneri, Nashik.

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### \*Correspondence for

#### Author:

**Bharambe Swati Vasant**

Department of Pharmaceutics,  
KCT's RGS College of  
Pharmacy, Anjeneri, Nashik,  
422 213. Maharashtra, India.

[gauribharambe13@gmail.com](mailto:gauribharambe13@gmail.com)

### ABSTRACT

Medicinal plants are natural gift to human lives to promote disease free healthy life. Emblica officinalis, commonly known as amla is widely distributed in tropical and subtropical areas and has therapeutic potential against deleterious diseases. Earlier it becomes a notable fruit for its rich amount of vitamin C, polyphenols such as tannins, gallic acid, ellagic acid, flavonoids like quercetin and rutin. Emblica officinalis (Amla) are widely used in the Indian system of medicine and believed to increase defense against diseases. This article discusses and summarizes important medicinal values of Emblica officinalis (EO). In this communication, we reviewed the applications of EO in hepatoprotective, antioxidant, anti-inflammatory, dental problem, respiratory problem and various other diseases. These papers

also review the studies on the Amla as important medicinal values. In this communication, we reviewed the applications of EO in cancer, diabetes, liver treatment, heart disease, ulcer, anemia and various other diseases. The use of EO as antioxidant, immunomodulatory, antipyretic, analgesic, cytoprotective, antitussive and gastro protective are also reviewed. Its applications for memory enhancing, ophthalmic disorders, lowering cholesterol level are focused. The effects of EO in neutralizing snake venom and as an antimicrobial are also included. This paper also review the retrospective studies on the Amla at molecular level.

**Key words:** Emblica officinalis, Ayurvedic medicine, Health assets, Cosmetics, Vitamin C.

## INTRODUCTION

An interesting trend in the use of “food as medicine” is the emergence and classification of some lesser known fruits as “super fruits”, with benefits that go far beyond nourishment alone. Amla fruit enjoys a special place in Ayurveda, as a nurturing food, that is credited with a number of health benefits. In the Ayurvedic tradition, the fruit forms an integral part of medicinal preparations that are used to support wellness and healthy aging <sup>1</sup>. According to believe in ancient Indian mythology, it is the first tree to be created in the universe <sup>2</sup>. Amla is known for its medicinal and nutritional properties. It is the richest source of vitamin C among fruits like Barbados cherry or West Indian cherry. It is one of minor fruits even though it has got an important fruit crop among the farmers, nursery man and scientist because of commercial significance and highly remunerative without much care. The demand for its processed products is gearing up day by day in domestic as well as in global market <sup>3</sup>. The amla (*Emblica officinalis* syn. *Phyllanthus emblica*) or Indian goose berry is an important minor arid zone fruit and a crop of commercial significance. There is growing evidence that the humble amla berry offers nearly legendary powers in healing and preventing atherosclerosis and related cardiovascular disease <sup>4</sup>. The amla can make a landscape attractive ornamental tree, especially when he wears his pale green berries.



## Geographical Distribution

Amla is found throughout India, the sea-coast districts and on hill slopes upto 200 meters, and is also cultivated in plains<sup>5</sup>. It is a potential crop which grows in the marginal soils and various kinds degraded lands such as salt-affected soils, salines and dry and semi-dry regions. It is common all over tropical and sub-tropical India and also found in Burma<sup>6</sup>, it is abundant in deciduous forests of Madhya Pradesh also grows in tropical and subtropical parts of Ceylon, Malay Peninsula and China<sup>7</sup>.

### The Botanical Classification

Kingdom	Plantae
Division	Angiospermae
Class	Dicotyledonae
Order	Geraniales
Family	Euphorbiaceae
Genus	Emblica
Species	Officinalis Geartn

### Synonym: *Phyllanthus emblica* Linn.

The *Emblica officinalis* is the medium to large deciduous plant of Euphorbiaceae family. A small to medium sized deciduous tree, 8-18 meters height with thin light grey bark exfoliating in small thin irregular flakes, leaves are simple, sub sessile, closely set along the branchlets, light green having the appearance of pinnate leaves; flowers are greenish yellow, in axillary fascicles, unisexual, males numerous on short slender pedicels, females few, sub sessile, ovary 3-celled; fruits globose, fleshy, pale yellow with six obscure vertical furrows enclosing six trigonous seeds in 2-seeded 3 crustaceous cocci<sup>8</sup>.

### Vernacular Names:

English	Emblic Myrobalan, Indian Goose berry
Sanskrit	Amalaki
Hindi	Amla
Kannada	Nelli Kayi
Marathi	Amla
Gujarati	Ambala
Malayalam	Nelli Kayi
Tamil	Nelli
Telgu	Usirikaya
Kashmir	Aonla



### Parts Used

It is a plant that is used in its entirety and so presents the herbalist with excellent value for money! The dried fruit, the nut or seed, leaves, root, bark and flowers are frequently employed. The ripe fruits are generally used fresh, but dried fruit are also used. The green fruit is described as being exceedingly acidic. The dried fruit is sour and astringent. The flowers are cooling and aperient. The bark is astringent<sup>9</sup>. There are two forms of amla, the wild one with smaller fruits and the cultivated form sometimes called "Banarsi" with larger fruits<sup>10</sup>.

### Ayurvedic medicine

In order to better understand the Ayurvedic system of medicine, a short introduction to the terminology might be helpful. The similarities with traditional Chinese medicine are striking as Ayurveda is based on a model of bodily humours or doshas and a need to maintain the inner life force (prana) which is believed to give rise to the fire of digestion and mental energy. Prana is linked to the breath or oxygen which feed the fire and should that fire is weak then the body is weak<sup>11</sup>. This inner fire is called agni or tejas while the relationship between prana and tejas give rise to ojas or good digestion and thus health. This good digestion is equated with juice or sap which in turn produces the six experiences or tastes (rasas) that are so crucial in Ayurvedic herbalism - sweet, sour, salty, pungent, bitter and astringent. The same descriptions are used in Chinese medicine. Ayurvedic medicines pay great attention to balancing these tastes and popular tonics often combine herbs representing each taste as a means of ensuring balance. The original Galenic theory had wind, earth, fire and water, the founding precept of any alchemist. Compare this to Ayurveda which has three humours: pitta (bile linked to the fire element), vata (wind associated with the air and ether

elements), and kapha (phlegm or dampness ruled by the elements of water and earth). These humours can also be seen as the waste products of the digestion process - the end product of the prana-tejas-ojas interaction. The more imperfect the digestion, the more waste products there are and the more imbalances in the system. This, however, is not the whole story, since for good health a balance is also needed between the three essential qualities called sattwa, rajas and tamas. Sattwa is regarded as the quality of purity and enlightenment, while the qualities rajas and tamas are the darker side of nature that are distraction and dullness respectively. Life requires all three of these qualities and it is the control and balance of rajas and tamas that can lead to spiritual well-being and health by developing the calm and clarity of sattwa. In addition to balancing the spiritual qualities, there are also the physical elements that need to be held in healthy balance<sup>12</sup>. The seven dhatus or tissues that need to be in equilibrium are plasma (rasa), blood (rakta), muscle (mamsa), fat (medas), bone (asthi), marrow and nerve tissue (majja) and semen (Shukra)<sup>13</sup>. The passages which allow this balancing act are the numerous srotas or "channels" which must be open to allow breath, food and water to flow freely throughout the body. They include the anatomical components like the oesophagus, trachea, arteries, veins and intestines. The srotas also include the Chinese acupuncture type "meridians" which allow energy to flow around the body<sup>14</sup>. The final balance relates to what comes out of the body, namely, the three waste products or malas - urine, sweat and faeces.

Agni, the spirit of light or life energy, in less colourful terms described as the digestive function, also needs to be strong. Ayurvedic medicine has around a thousand herbs that are commonly used in this traditional system of medicine, but overall there may be more than 2,500 that are used across India in all forms of herbal medicine<sup>15</sup>. Every household has its maharashtra or "grandmother's purse" kept replenished with healing herbs for the household. Generations of mothers have passed this knowledge to their daughters (or from sadhu to sadhu) to keep this healing tradition alive.

### **The Ayurvedic description of Amla<sup>16</sup>**

The 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

**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. Because of 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<sup>17</sup>.

Amla has been considered the best of the Ayurvedic rejuvenative herbs, because it is tridosaghna. Uniquely, it has a natural balance of tastes (sweet, sour, pungent, bitter and astringent) all in one fruit, it stimulates the brain to rebalance the three main components of all physiological functions, the water, fire, and air elements within the body<sup>18</sup>.

#### **Identification and Chemical Constituents of *Emblia officinalis***

Identification of correct genotype of medicinal plant material remained challenging to botanical drug industries. Limitations of chemical and morphological approaches for authentication have created need for newer methods in quality control of botanicals. DNA based marker for identification of EO were developed. Random Amplified Polymorphic DNA (RAPD) technique was used to identify a putative marker (1.1 kb) specific for EO. RAPD amplicon was used to generate Sequence Characterized Amplified Region (SCAR) marker. The SCAR marker was found beneficial for identification of EO in its commercial samples<sup>19</sup>. EO primarily contains tannins, alkaloids, phenolic compounds, amino acids and carbohydrates. Its fruit juice contains the highest vitamin C (478.56 mg/100 mL). The fruit when blended with other fruits boosted their nutritional quality in terms of vitamin C content<sup>20</sup>. Compounds isolated from EO were gallic acid, ellagic acid, 1-O-galloyl-beta-D-glucose, 3, 6-di-O-galloyl-D-glucose, chebulinic acid, quercetin, chebulagic acid, corilagin, 1, 6-di-O-galloyl beta D glucose, 3 Ethylgallic acid (3 ethoxy 4, 5 dihydroxy benzoic acid) and isostrictinin<sup>21</sup>. *Phyllanthus emblica* also contains flavonoids, kaempferol 3 O alpha L (6" methyl) rhamnopyranoside and kaempferol 3 O alpha L (6"ethyl) rhamnopyranoside<sup>22</sup>. A new acylated apigenin glucoside (apigenin 7 O (6" butyryl beta glucopyranoside) was isolated from the methanolic extract of the leaves of *Phyllanthus emblica* together with the known compounds; gallic acid, methyl gallate, 1,2,3,4,6- Penta-O-galloylglucose and luteolin-4'-Oneohesperidoside were also reported<sup>23</sup>.



A compilation of applications for emblica fruits was carried out by several Ayurvedic writers during the last 25 years. The main indications are:

- i. Digestive system disorders: dyspepsia, gastritis, hyperacidity, constipation, colic, colitis, hemorrhoids
- ii. Bleeding disorders: bleeding hemorrhoids, hematuria, menorrhagia, bleeding gums, ulcerative colitis
- iii. Metabolic disorders: anemia, diabetes, gout
- iv. Lung disorders: cough, asthma
- v. Aging disorders: osteoporosis, premature graying of hair, weak vision
- vi. Neurasthenia: fatigue, mental disorders, vertigo, palpitations

Dr. Shibnath Ghosal, at the Banaras Hindu University, published his findings about active constituents of emblica fruits in 1996, reporting on the mistaken identification of vitamin C<sup>24</sup>. He turned his research findings into a patent just four years later; describing the production of the mixture he called Capros. It is derived from amla by a careful process of extraction that prevents breakdown of the tannins. It contains<sup>25</sup>:

Emblicanin-A: 27%

Emblicanin-B: 23%

Punigluconin: 8%

Pedunculagin: 14%

Gallo-ellagitannoids: 18%

Rutin: 10%.



Unripe emblica



Ripe emblica ready for collection

**Table 2: General description of *Emblica officinalis* [26-28]**

Habitat
Found in India , Pakistan, Uzbekistan, Srilanka, South East Asia, China and Malaysia
Used Parts
Dried fruits, Fresh fruit, seed, leaves, rootbark, flowers
Fruits
Ripen from November to February
Nearly spherical or globular, wider than long and with a small and slight colonic depression both apexes
Fruit is 18-25mm wide and 15-20mm long
Surface is smooth with 6 obscure vertical pointed furrow
Mesocarp is yellow and endocarp is yellowish brown in ripened condition
In fresh fruit mesocarp is acidulous and in dried fruit it is acidulous astringent
Leaves
Leaf is 8-10 mm or more long and 2-3 m broad, hairless light green outside, palegreen or often pubescent beneath.
It contains gallic acid, ellagic acid, chebulic acid, chebulinic acid, and chebulagic acid, a gallantonic called amlic acid, alkaloids phyllantidine and phyllantine.
Seeds
Four-Six, smooth, dark brown
A fixed oil, phosphatides and a small quantity of essential oil. The fixed oil (yield 16% and has the following characterstics:
acid value12.7; saponification value 185;iodine value 139.5;acetyl value 2.03; unsaponifiable matter 3.81%; sterol 2.70% ; saturated fatty acid 7%.Contains linoleic acid (8.78%),linoleic (44%). oleic (28.40%), steric (2.15%), palmitic (2.99%) and miristic acid (0.95%).
Bark
Thick to 12 mm, shining grayish brown or grayish green.
Leukodelphinidin, tannin and proanthocyanidin
Roots
Ellagic acid and lupeol.



### **Emblica officinalis: A Natural Wonder**

*E. officinalis* is one of the precious gifts of nature to mankind. Fruit known in Sanskrit as Amalaka, Hindi- Amla, Bengali- Amalaki, Nepalese- Amala, Telugu- Usirikai, Tamil- Nellikai. Amla is a rich source of vitamin C, among 1 gm of vitamin C per 100 ml fresh juice, and requisite for the synthesis of collagen, which is liable for keeping the cells of the body together. It has the same amount of vitamin C present in two oranges [29]. It increases the red blood cell count and helps to promote good health. Numerous experimental evidences have shown that amla fruit possess antioxidant [30], hepatoprotective [31], hypocholesterolemic [32] and anti-inflammatory activities [33].

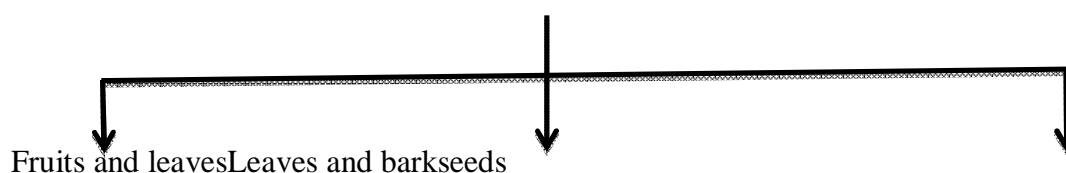
### **Emblica officinalis: The Divinity Thing in Ayurveda**

Traditionally amla was believed that amrit/ambrosia packed with all rasas thereby, it becomes an unavoidable part in ayurveda. In that sense, amalaki and hareetaki stand next to amrit since they exhibit five rasas. The fruit amla is deliberated as a rasayana for pitta. Charaka samhita mentioned amalaki is viewed one of the most potent and nutritious and also it says "Amalaki is the best rejuvenative herb", and specifically observed that amla is a great rasayana that helps to protect from disease and reduce the possibilities of premature ageing. Amla has low molecular weight hydrolysable tannins (Emblicanin A and Emblicanin B, punigluconin) thereby it is considered as one of the more strong antioxidant herb in ayurveda [34].

### **Emblica officinalis: The Natural Refreshner**

Vitamin C present in *E. officinalis* is one of the main factors that can help to retrieve or refill the energy lost by body. So, the replenishment of new energy causing by *emblica officinalis* is considered as a natural refreshner.

#### **Major Constituents in Emblica**



### **As an energy refiller**

One teaspoon of *E. officinalis* powder over with honey after taking milk in the morning helps to improve freshness and strength to the body.

**In anaemia therapy**

Amla is a good absorption agent of iron. Ascorbic acid is highly present in *E.officinalis*, which helps to reduce iron deficiency [35].

**EO fights with acidity**

The irregular food habits and abnormal intake of sweet, sour, spicy and oily food may cause acidity, and also tea, coffee and smoking are causing that trouble. The physiological factors are anger, grief and depression. This problem is overcome by taken of one gram of *E.officinalis* powder and small amount of sugar mixed with milk or water twice a day.

**Action on toxins**

Some of the toxins may be stored in liver by regular uptake of pain killers, antibiotics, medication and alcohol consumption. Emblica prevents the body from these toxins by strengthening the liver thereby *E.officinalis* act as good detoxifier helps to purify the blood.

**Urinary trouble frustration agent**

The fresh juice of *E.officinalis* acts as a diuretic which normalize acidic urine. It is helpful in burning urinary infection [36].

**Relieves leucorrhoea**

The major problem of females is the discharge of white mucous material, often an indication of infection. This problem is overcome by taken of 3 gms of powdered *E. officinalis* with 6 gms of honey every day for one month can cure this problem.

**Effects on urinary stone**

Having *E.officinalis* powder with radish can break the stones present in urinary bladder and washed it out through urine. The best time to have them is morning or evening.

**Emblica therapy for diarrhea**

Paste of *E.officinalis* leaves mixed with honey is an effective cure for diarrhea.

**Emblica as a febrifuge**

The leaves and seeds of the fruit can make get well back from fever. The leaf extracts are widely used for the treatment of fever in Malays homeo medicines. Emblic seeds are boiled with chitrak root and chebulic myrobalan and the boiled contents are good for curing fever [37].

**Relieves headache**

Applying mixtures of *E.officinalis* with buttermilk make temperature reduction and give chillness to head and its paste reduce headache. Well digestive agent Fresh green leaves of amla is crushed and mixed with curd taken before food can improves good digestion.

**Improves body weight**

It assists in balancing nitrogen levels and increasing protein levels very well, which helps in increasing your weight. *E.officinalis* contains minerals including chromium, zinc, and copper, which helps in maintaining proper functioning of the metabolic activities of the body.

**Skin Sores and Wounds**

The milky juice of the leaves is a good application to sores. Grind the bark of *Emblica officinalis* (10 g) into a paste and apply to the cut or wound area once daily for 2 to 3 days.

**Scurvy**

Anti-ascorbatic virtues have been attributed to the fruits, which are known as the *Emblica myrobalans*.

**Vaginal Complaints**

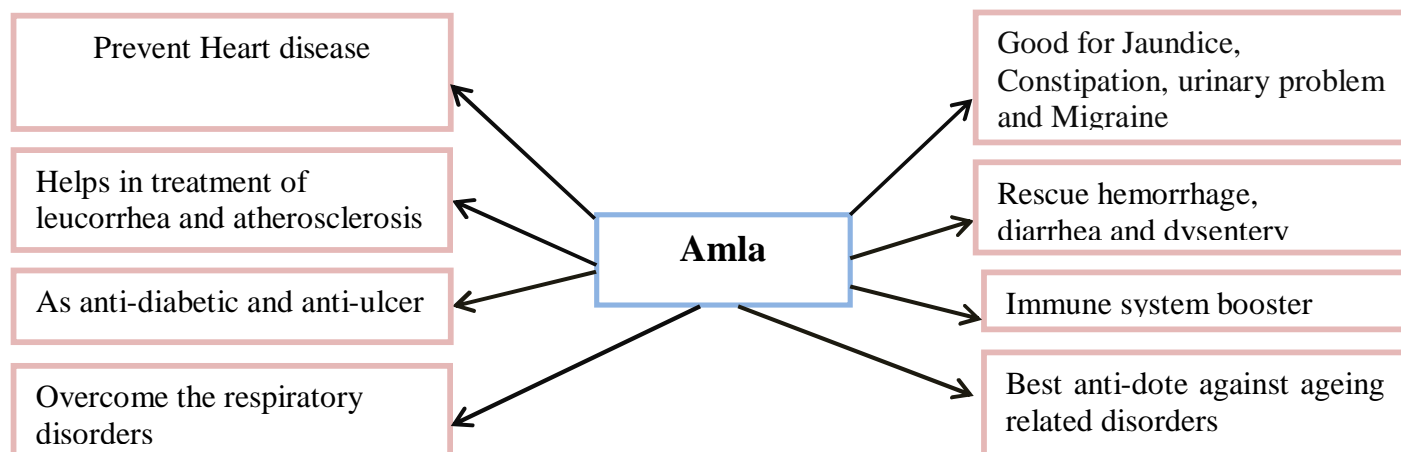
A mixture of the fruit juice and sugar is used for the relief of burning in the vagina.

**Water Purification**

In certain districts (Travancore) the natives put the young branches into the wells to impart a pleasant flavour to the water, especially if it be impure from the accumulation of vegetable matter or other causes.

***Emblica officinalis*: The Beneficial Health Tonic [38]**

Amla tonic has a haematinic and lipolytic function widely used to treat scurvy, jaundice, and prevents indigestion and controls acidity. Amla improves vitality, resistance to illness, slow down the ageing process and it is also an important part of an ayurvedic health tonic known as chyawanprash. The benefits of amla health tonic are given below.



**Fig. 1: Benefits of Emblica officinalis**

## PHARMACOLOGICAL ACTIVITY [39-42]

### Antitumor Activity

Aqueous extract of emblica officinalis was found to be cytotoxic to L 929 cells in culture in a dose Dependent manner. Concentration needed for 50% inhibition was found to be 16.5g/ml. Emblica officinalis and chyawanprash (a non-toxic herbal preparation containing 50% E. extracts) were found to reduce ascites and solid tumours in mice induced by DLA cells. Animals treated with 1.25 g/kg b.wt. of emblica officinalis extract increased life span of tumour bearing animals (20%) while animals treated with 2.5 g/kg b.wt of Chyavanaprash produced 60.9% increased in the life span. Both emblica officinalis and chyawanaprash significantly reduced the solid tumours. Tumour volume of control animals on 30<sup>th</sup> day was 4.6 ml whereas animals treated with 1.25 g/kg b.wt of emblica officinalis extract and 2.5 g/kg b.wt chyawanaprash showed tumour volume of 1.75 and 0.75 ml, respectively emblica officinalis extract was found to inhibit cell cycle regulating enzymes cdc 25 phosphates in a dose dependent manner. Concentration needed or 50% inhibition of cdc 25 phosphatase was found to be 5 g/ml and that needed for inhibition of cdc2 Chinese was found to be >100g/ml. The results suggest that antitumor activity of emblica officinalis extract may partially be due to its interaction with cell cycle regulation.

### Hepatoprotective Activity

Hepatoprotective activity of emblica officinalis (EO) and chyawanaprash (CHY) extracts was studied using Carbon tetrachloride induced liver injury model in rats. EO and CHY extracts were found to inhibit the hepatotoxicity produced by acute and chronic administration as seen from the decreased levels of serum and liver lipid peroxides (LPO), glutamate-pyruvate

transaminase (GPT), and alkaline phosphatase (ALP). Chronic CCI (4) administration was also found to produce liver fibrosis as seen from the increased levels of collagen hydroxyl proline and pathological analysis. EO and CHY extracts were found to reduce the elevated levels significantly, indicating that the extract could inhibit the induction of fibrosis in rats.

### **Antioxidant Activity**

Pretreatment with the butanol extract of the water fraction of *Phyllanthus emblica* fruits at the dose of 100 mg/kg body-weight, orally administered to rats for 10 consecutive days, was found to enhance secretion of gastric mucus and hexosamine ( $P < 0.001$ ) in the Indomethacin induced ulceration of rats. The morphological observations also supported a protective effect of the stomach wall from lesion. The Indomethacin treatment of the premedicated animals with the drug hardly affected either the malondialdehyde (MDA) or superoxide dismutase (SOD) level in gastric tissue while the ulcerative agent itself significantly enhanced both the levels. An antioxidant property appears to be predominantly responsible for this cyto protective action of the drug. The antioxidant activity of tannoid active principles of *E. officinalis* consisting of emblicanin A (37%) emblicanin B (33%), punigluconin (12%) and pedunculagin (14%), was investigated on the basis of their effects on rat brain frontal cortical and striatal concentrations of the oxidative free radical scavenging enzymes, superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPX), and lipid peroxidation, in terms of thiobarbituric acid reactive products. The results were compared with effects induced by deprenyl, a selective monoamine oxidase (MAO) B inhibitor with well documented antioxidant activity. The active tannoids of *E. officinalis* (EOT), Administered in the doses of 5 and 10 mg/kg, i.p and deprenyl (2 mg/kg, i.p), induced an increase in both frontal cortical and striatal SOD, CAT and GPX activity, with concomitant decrease in lipid per oxidation in these areas when administered once daily for 7 days. Acute single administration of EOT and deprenyl had insignificant effects. The results also indicate that the antioxidant activity of *E. officinalis* may reside in the tannoids of the fruits of the plant, which have vitamin C like properties rather than vitamin C itself.

### **Anti-inflammatory Activity**

Leaves and fruits of *Phyllanthus emblica* L. have been used for the anti-inflammatory and antipyretic treatment of rural populations in its growing areas in subtropical and tropical parts of China, India, Indonesia, and the Malay Peninsula. In the present study, leaves of *Phyllanthus emblica* were extracted with ten different solvents (n-hexane, diethyl ether, and

methanol, tetrahydrofuran, acetic acid, dichloromethane, 1, 4- dioxane, toluene, chloroform and water). The inhibitory activity of the extracts against human polymorpho nuclear leukocyte (PMN) and a platelet function was studied. Methanol, tetrahydrofuran, and 1, 4-dioxane extracts(50 micrograms/ml) inhibited leukotriene B4-induced migration of human PMNs by 90% and N- formyl - L- methionyl L phenylalanine (FMLP) – induced degranulation by 25-35%. The inhibitory activity on receptor-mediated migration and degranulation of human PMNs was associated with a high proportion of polar compound in the extracts as assessed by normal phase thin layer chromatography. Diethyl ether extract (50 micrograms/ml) inhibited calcium ionosphere A23187- induced leucotrienes Release from human PMNs by 40% thromboxane B2 production in platelets during blood clotting by 40% and adrenaline-induced platelet aggregation by 36%. Ellagic acid, gallic acid and rutin all compounds isolated earlier from ph. Emblica, could not explain the inhibitory activity on PMNs and platelets, which confirm the anti-inflammatory and antipyretic properties of this plant as suggested by its use in traditional medicine. The data suggest that the plant leaves contain as yet unidentified polar compound(s) with potent inhibitory activity on PMNs and chemically different a polar molecule(s) which inhibit both prostanoid and leukotriene synthesis. Carrageenan- and dextran-induced rat hind paw oedema. Anti-inflammatory activity was found in the water fraction of methanol extract of the plant leaves. The effects of the same fraction were tested on the synthesis of mediators of inflammation such as leukotrienes B4 (LTB4), platelet-activating factor (PAF) and thromboxane B2 (TXB2), and on LTB4- and N- leucocytes (PMNs) in-vitro. The water fraction of the methanol extract inhibited migration of human PMNs in human platelets during clotting; suggesting that the mechanism of the anti-inflammatory action found in the rat paw model does not involve inhibition of the synthesis of the measured lipid mediators.

### **Health Assets of *Emblica officinalis* [43-46]**

#### **I. *E.officinalis* Powder**

##### **A. Treat cardiac disease**

Cholesterol is an essential component in human body. Hypertension, diabetes and cholesterol are the major factors which cause heart disease. Blood vessels involve the collection of unused cholesterol that leads to high pressure, which increase the possibility of heart attacks. To overcome these impediments, making the mixture of powdered dry *E.officinalis* powder with sugar candy. One teaspoonful of this mixture is mixed with a glass of water and taken in



empty stomach may neutralize the blood cholesterol level. Vitamin C present in *E.officinalis* which enlarges the blood vessels and reduces pressure.

### **B. Action on diabetes**

*E.officinalis* fruit powder enhances to control high blood pressure. Triphala comprises three herbs namely amla, harada and bihara. The blood sugar level may be increased by the action of an enzyme alanine transaminase which is present in liver. This enzyme can be normalized by taken one teaspoonful of this mixture (equal quantities of amla, jamun and bitter gourd powder) once or twice per day. Chromium, a mineral present in amla fruits responsible for the anti-diabetic effect.

### **C. Eye tonic**

Triphala powder (made by mixing over of Hirda, behde and *E.officinalis* powder) with honey makes the vision of eye bright and keeps shining and also good for the digestive system.

### **D. Physical and mental health**

Physical and mental infirmity is overcome with taken of *Emblica officinalis*, murabba every day in the morning.

### **F. Impedes constipation**

The irregular and infrequent evacuation of the bowels is known as constipation. This problem is cured by taken of 1 teaspoon of *Emblica officinalis* powder with milk or water every morning. On the other hand 4 tea spoon of fresh amla juice and 3 teaspoon of honey mixed with water may deal this constipation. If constipation is caused by parasites, take 20gms of fresh *E.officinalis* juice every day may destroy the worms.

### **G. Jaundice**

Fresh *E.officinalis* fruits are soaking with 4 munnakkas; both are grind with *emblica officinalis* juice after one hour. This portion may gives relief in jaundice.

## **II. *E.officinalis* JUICE**

Taken of *Emblica officinalis* juice mixed with honey every morning and evening expose numbers of medicinal benefits include cures weakness of the generative system, blood purification, act on diabetes, act on cold and cough.

**A. Gout**

Gout is nothing but an inflammation of the big toe caused by defects in uric acid metabolism resulting in acid deposit and its salts in the blood and joints. This problem is cured by taken of a *Emblica officinalis* juice with old ghee makes softening of joints and helps in curing gout and also removing the spots caused by measles, chicken pox, small pox.

**B. Piles**

Drinking fresh *E.officinalis* juice with half teaspoon of ghee and 1 teaspoon of honey and 100 Gms of milk after lunch cures chronic piles problem.

**III. E.officinalis PASTE****A. Respiratory disorder**

*E.officinalis* has been witnessed that it can retrieve the normal respiration while the system gets affected. The paste made by 10gm leaves of *Phyllanthus emblica*, 5 fruits of *Terminalia chebula*, 9 seeds of *Piper nigrum*, one garlic are crushed over and mixed with 25 ml ghee made from cow's milk and a clove. The fresh juice of amla mixed with honey can get back best from asthma, cough, and other respiratory disorders.

**B. Urinary problem**

The paste made by 20gms of pulp of dried *E.officinalis* in 160 gms of water till 40 gms are left. This was mixed with 20gms of Gur. Regular use of this portion may cure urinary problem.

**C. Migraine**

Migraine is a severe vascular headache in female rather than men. This is cures by applying the paste made by dried *E.officinalis* powder with kumkum, neelkamal and rose water.

**D. Therapy for diarrhea**

Paste of *E.officinalis* leaves mixed with honey is an effective cure for diarrhea.

**IV. As cosmetics****A. Helps in hair growth**

Consumption of green vegetable juice with 2-3 *E.officinalis* fruits can prevent from hair greying. It has the potent astonishing effect on hair and skin. Amla stimulates the hair follicles and improves the hair growth and gives the complete nourishes to hair roots.

**B. Prevents skin damage**

Various layers present in skin may be damaged due to UV radiation from sun is known as photo-aging which is a complex biological process. Amla reduce this problem due to its free radical assuaging nature. It improves skin elasticity by taken of dried *E.officinalis* powder mixed with water.

**C. Act against pimples**

Pimples on face caused by impure blood and can be removed by taken of *E.officinalis* combined with neem.

**D. As natural mouth freshner**

Zeatin, a cytokine like substances is also present in *E.officinalis* leaves. It helps in refining the mouth, strengthens teeth and bones.

**E. Immune system enhancer**

*E.officinalis* is considered as a versatile and powerful antioxidant that protects the body against all types of cancer and helps to reduce the blood pressure.

**F. Anti-venom activity**

*Phyllanthus emblica* has been shown to possess anti-venom activity. The plant extracts which neutralized the defibrinogenating and inflammatory activity of *Vipera russellii* snake venom.

**V. Amla oil**

Applying *E.officinalis* oil before going to bed removes mental weakness.

**A. Ameliorates eyesight**

Diseases like reddening, itching and watering of eyes are counteracted by *E.officinalis*, which shows fine consequences in cataracts.

**B. Hinders gallbladder disorders**

A person who develops gallbladder disorders due to low vitamin C levels. Taking *E.officinalis* saves one from gallbladder infections.

**C. Good for reproductive health**

Amla can increase sperm count and it act as an aphrodisiac. White discharge in women is the major problems which can be reduced by taking of dried *E.officinalis* seeds mixed with

honey.

### **TRIPHALA [47]**

Triphala comprises 3 herbs namely amla (*Emblica officinalis*), harad (*Chebulicmyrobalan*) and beheda (*Bellericmyrobalan*). During day time, it should be taken with warm water and at bedtime with warm milk and in morning with honey. Normal dose should be 2 gm. Amla is believed to rejuvenate the organ systems of the body, afford strength and wellness. Amla strengthening the central nervous system and helps in lowering the blood cholesterol enhance vision; strengthen lungs and the respiratory system. These all things make the fruit amla become “King of Rasayana”. According to ayurvedic experts, regular treatment of *E.officinalis* will make our live more than 100 years like a youth.

### **Recommended dosage of vitamin C [48]**

Nowadays, *E.officinalis* powder is extensively used for enhancing entire immune system. According to U.S. Recommended Dietary Allowance (RDA), daily ingestion of nutritional vitamin C is given as below: Infants (age below 1 year):30 to 35mg Children (age 1 to 14 years):40 to 50mg Adolescent (age 15 to 18 years): 65 to 75mg Men (age over 18 years): 90mg Women (age over 18 years):75mg Various doses have been studied, and there is no proven effective dose for *E.officinalis*. 1-2 capsules have been taken three times daily after meals.

### **CONCLUSION**

Research in ayurvedic medicinal plants has gained a renewed focus recently. The prime reason is that other system of medicine although effective come with a number of side effects that often lead to serious complications. Plant based system of medicine being natural does not pose this serious problems. Amla has been considered the best of the Ayurvedic rejuvenative herbs. Though *Emblica officinalis* has various medicinal applications, but it is the need of hour to explore its medicinal values at molecular level with help of various biotechnological tools and techniques. In this review, we have attempted to congregate morphological, phytochemical and health assets of *Phyllanthus emblica*, a medicinal herb widely used in many ayurvedic medicinal systems.

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