



Review on: Study of Therapeutic Effect of Herbal Drug *Emblica Officinalis*

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ABSTRACT

Amla, also known as *Emblica officinalis*, is frequently used in Indian medicine and is said to boost the body's resistance to illness. In this article, significant medical benefits of *Emblica officinalis* are discussed and compiled. (EO). In this message, we discussed the uses of EO in treating conditions including cancer, diabetes, liver disease, heart disease, ulcers, anemia, and other illnesses. Also discussed are the uses of EO as an analgesic, cytoprotective, immunomodulatory, antipyretic, antitussive, and gastroprotective agent. Its applications are concentrated on improving cognition, treating ocular conditions, and decreasing cholesterol levels.

Keywords: medicinal properties, *Emblica officinalis* (Amla), Antioxidant, immunomodulatory.

1. Introduction

To encourage a disease free healthy life Mother Nature has gifted mankind medicinal plants. Numerous medicinal plants are present in a collection of herbal preparations of the Indian traditional health care system (Ayurveda) named Rasayana, recommended for their interesting antioxidant activities. *Phyllanthusemblica* Linn. (syn. *Emblicaofficinalis*), commonly known as Indian gooseberry or Amla, family Euphorbiaceae, is a main herbal drug utilized in unani (Graceo-arab) and ayurvedic systems of medicine. Medicines of natural origin like herbs and plant metabolites / extracts are being used since long as beneficial remedies for managing and curing several diseases and disorders for protecting health of humans and animals¹⁻⁶. Plants and herbs are a rich source of developing effective and alternative / complementary therapeutic drugs and medicines.[1] *Phyllanthusemblica* Linn. Or *Emblicaofficinalis*Gaertn. Commonly known as Indian gooseberry r Amla is one of the most important medicinal plants in Indian traditional systems of medicine (Ayurveda, Unani and Siddha). It is a well-known fact that all parts of amla are useful in the treatment of various diseases. Among all, the most important part is fruit. Amla fruit is widely used in the Indian system of medicine as diuretic, laxative, liver tonic, refrigerant, stomachic, restorative, antipyretic, hair tonic, ulcer preventive and for common cold, fever; as alone or in combination with other plants. Phytochemical studies on amla disclosed major chemical constituents including tannins, alkaloids, polyphenols, vitamins and minerals. Gallic acid, ellagic acid, emblicanin A & B, phyllembin, quercetin and ascorbic acid are found to be biologically effective. Research reports on amla reveals its analgesic, anti-tussive, antiatherogenic, adaptogenic; cardio, gastro, nephron and neuroprotective, chemopreventive, radio and chemo modulatory and anticancer properties. Amla is also reported to possess potent free radical scavenging, antioxidant, anti-inflammatory, anti-mutagenic, immunomodulatory activities, which are efficacious in the prevention and treatment of various diseases like cancer, atherosclerosis, diabetes, liver and heart diseases. In this article, we discuss the nutritional value, biochemical constituents, traditional uses, medicinal value of amla and its use as a household remedy. We also emphasized the mechanisms behind the pharmacological activities based on the recent research reports and tried to summarize the results of research done from the past 5 years with proper specifications on the future prospects in a pharmacological perspective. The EO fruit contains high vitamin C and other bioactive compounds such as polyphenols, ellagic acid, chebulinic acid, gallic acid, chebulagic acid, apeigenin, quercetin, corilagin, and leutolin^{11,15,16}. Sugar-substituted phenolics (flavone, phenolic, flavonol glycosides)¹⁵, tannins (emblicanin A and B, phyllanemblin B, Punigluconin) are present in fruit pulp^{16,25,26}. Amla extracts have been extensively investigated for different biological activities¹⁵. It is used equally as a medicine and as a tonic to build up lost energy and vigor. *E. officinalis* is extremely nutritious and might be a chief dietary source of vitamin C, amino acids, and minerals. Entire parts of the plant are used for medicinal purposes, particularly the fruit, which has been used in Ayurveda as a powerful rasayana and in customary medicine for the treatment of diarrhea, jaundice, and inflammation. The fruit is used either alone or in combination with other plants to treat many ailments such as common cold and fever; as a diuretic, laxative, liver tonic, refrigerant, stomachic, restorative, alterative, antipyretic, anti-inflammatory, hair tonic; to prevent peptic ulcer and dyspepsia, and as a digestive. Moreover, plant parts show antidiabetic, hypolipidemic, antibacterial, antioxidant, antiulcerogenic, hepatoprotective, gastroprotective, and chemo preventive property The present review highlights the antimicrobial potential, phytoconstituents and modes of action of *Emblicaofficinalis* and its extracts in humans and animals. Other pharmacological activities and beneficial health applications have also been discussed in brief.



Fig: leaves of Amla

BIOLOGICAL SOURCE: Emblica, Indian goose berry, amla. This consists of dried, as well as fresh fruits of the plant *Emblica officinalis* Gaerth (*Phyllanthusemblica* Linn.), belonging to family Euphorbiaceae. It is a small- or medium-sized tree found in all deciduous forests of India. It is also found in Sri Lanka and Myanma [1]

FAMILY: Phyllanthaceae. Phyllanthaceae is a family of flowering plants in the eudicot order Malpighiales. It is most closely related to the family Picrodendraceae. The Phyllanthaceae are most numerous in the tropics, with many in the south temperate zone, and a few ranging as far north as the middle of the north temperate zone.[2]

HISTORY: The origin of the name is from Sanskrit Amlaki. *Emblica officinalis* known as Amla in Hindi, and Yeowkan in Chinese, *Emblimyrobalan* and Indian gooseberry in English and *Phyllanthusemblic* in French. Amla is one of the important herbal drugs used in Unani and Ayurvedic systems of medicine. Herbal medicine is the oldest form of health care known to mankind. Herbs had been used by all cultures throughout history. It was an integral part of the development of modern civilization. Primitive man observed and appreciated the great diversity of plants available to him. The plants provide food, clothing, shelter and medicine. Much of the medicinal use of plants seems to have been developed through observations of wild animals, and by trial and error. As time went on, each tribe added the medicinal power of herbs in their area to its knowledge base. They methodically collected information on herbs and developed well-defined herbal pharmacopoeias. Indeed, well into the 20th century much of the pharmacopoeia of scientific medicine was derived from the herbal lore of native peoples. Many drugs commonly used today are of herbal origin. Indeed, about 25% of the prescription drugs dispensed in the United States contain at least one active ingredient from plant material. Some are made from plant extracts; others are synthesized to mimic a natural plant compound. The opium poppy yields morphine, codeine and paregoric, a treatment for diarrhoea. Laudanum, a tincture of the opium poppy, was the favoured tranquilizer in Victorian times. Even today, morphine – the most important alkaloid of the opium poppy – remains the standard against which new synthetic pain relievers is measured. Prior to the discovery and subsequent synthesis of antibiotics, the herb *Echinacea* (which comes from the plant commonly known as purple coneflower) was one of the most widely prescribed medicines in the United States. The use of plants as medicine is older than recorded history. As mute witness to this fact marshmallow root, hyacinth and yarrow have been found carefully tucked around the bones of a Stone Age man in Iraq. These three medicinal herbs continue to be used today. Marshmallow root is a demulcent herb, soothing to inflamed or irritated mucous membranes, such as a sore throat or irritated digestive tract. Hyacinth is a diuretic that encourages tissues to give up excess water.



Fig 2. Morphology of *Emblica officinalis* .

COLLECTION & CULTIVATION: It is grown by seed germination. It can also be propagated by budding or cutting. It does not tolerate the frost or drought. It is normally found up to an altitude of 1500 m. Commercially, it is collected from wild-grown plants. Nowadays, the newly released varieties are selected for better yield. These are known as Banarasi, Kanchan, Anand-2, Balwant, NA6, NA7 and B5-1. Seeds or seedlings are placed at a distance of 4.5 × 4.5 meters in red loamy or coarse gravelly soil. Proper arrangement for irrigation is required, Drip irrigation is most suitable. Fertilizers in the dose range of 750–900 gm of urea, 1 kg superphosphate, and 1 to 1.5 kg of potash per annum depending upon the quality of soil are sufficient. The above dose is divided into two equal parts, one part is applied in September/October, whereas the other in April to May every year. Pruning is done regularly and only four to six branches about 0.75 to 1.0 meter above the ground are retained. Plant bears male and female flowers separately. A plant mainly of the hot, tropical lowlands, succeeding in both humid and semi-arid areas. It can also be found at elevations up to 2,300 metres in southern China. It grows best in areas where annual daytime temperatures are within the range 20 – 29°C, but can tolerate 14 – 35°C. It prefers a mean annual rainfall in the range 1,500 – 2,500mm, but tolerates 700 – is a very easily grown plant, reported to thrive in regions that are too dry and on soil that is too poor for most other fruit crops. Requires a position in full sun or part day shade, but is undemanding as to soil requirements so long as it is well-drained. It can even succeed on alkaline soils, though in a highly alkaline soil (pH 8.0) nutritional deficiency are evident. For maximum productivity, the tree requires deep soil ranging from sandy loam to clay, light or heavy, and slightly acidic to slightly alkaline. (4)

GEOGRAPHICAL SOURCE: It is a small- or medium-sized tree found in all deciduous forests of India. It is also found in Sri Lanka and Myanmar. The leaves are feathery with small oblong pinnately arranged leaflets. The tree is characteristic greenish-grey and with smooth bark. Emblica, Indian goose berry, amla. This consists of dried, as well as fresh fruits of the plant *Emblica officinalis* Gaertn. (*Phyllanthus emblica* Linn.), belonging to family Euphorbiaceae. It is a small- or medium-sized tree found in all deciduous forests of India. It is also found in Sri Lanka and Myanmar. [5]

MORPHOLOGICAL CHARACTER: [6] The tree is small to medium in size, reaching 1–8 m (3 ft 3 in–26 ft 3 in) in height. The branchlets aren't glabrous or finely pubescent, 10–20 cm (3.9–7.9 in) long, usually deciduous; the leaves are 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 six vertical stripes or furrows. Ripening in autumn, the berries are harvested by hand after climbing to upper branches bearing the fruits. (3) The taste of Indian gooseberry is sour, bitter and astringent, and it is quite fibrous. In India, it is common to eat gooseberries steeped in salt water and turmeric to make the sour fruits palatable. Amla tree is a small to medium sized deciduous tree with an average height of 8-18 m, with thin light grey bark exfoliating in small thin irregular flakes, exposing the fresh surface of a different color underneath the older bark. The average girth of the main stem is 70 cm. In most cases, the main trunk is divided into 2 to 7 scaffolds very near to the base [5]. Leaves are 10 -13 mm long, 3 mm wide, closely set in pinnate fashion which makes the branches feathery in general appearance. After setting of the fruits leaves develop. Flowers are unisexual, 4 to 5 mm in length [6], pale green in color, borne in leaf axils in clusters of 6 to 10. Fruits are fleshy, almost depressed to globose shape, 2.1-2.4 cm in diameter, 5.3-5.7 g in weight, 4.5-5.0 mL in volume. It is a tree of small or moderate size with a greenish-grey bark and greenish-yellow flowers, formed in axillary clusters. The feathery leaves are linear-oblong, with a rounded light green and resembling pinnate leaves. [6,7].



FIG 3. AMLA FRUIT.FIG 4.AMLA SEEDS FIG 5.AMLA LEAVES FIG 6

AMLA TREE MICROSCOPICAL CHACHACTER :

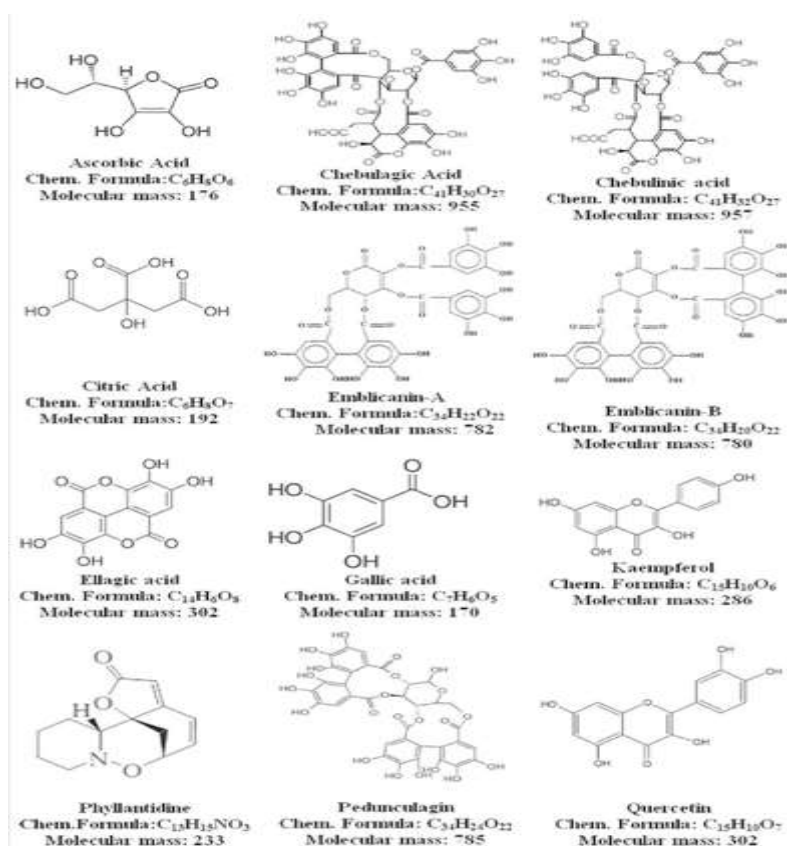
Fruit shows an epicarp consisting of epidermis with a thick cuticle and two to four layers of hypodermis; The cells in hypodermis – tangentially elongated, thick-walled, smaller in dimension than epidermal cells; mesocarp consists of thin-walled isodiametric parenchymatous cells; several collateral fibrovascular bundles scattered throughout mesocarp; xylem composed of tracheal elements, fibretracheids and xylem fibres; tracheal elements, show reticulate, scalariform, and spiral thickenings; mesocarp also contains large aggregates of numerous irregular silica crystals.[3] TS of pericarp of fruit shows epicarp consisting of a single layer of epidermis, cell appearing tabular and polygonal in surface view; cuticle present; a few small rosette crystals of calcium oxalate present in epidermal cells; Mesocarp cells tangentially elongated parenchymatous and cell with walls showing irregular thickenings; ramified vascular elements occasionally present, lignified having wide lumen; stone cells present, either isolated or in small groups toward endocarp; Pitted fibers with walls appearing serrated due to the pit canals leading into lumen, present (Ayurvedic Pharmacopoeia of India.[3])

Table (1):microscopical characteristics of powdered Amalaki fruit

Sr. No	Reagents	Observation	Characteristics
1.	Phloroglucinol +Conc.Hcl	Pink	Lignified vessels
2.	Dil.sulphuric acid	White	Calcium oxalate crystal
3.	Alcoholic picric acid	Yellow	Starch grains
4.	Sudan red III	Yellow red	Oil globules & cuticles

CHEMICALCONSTITUENTS: It is highly nutritious and is an important dietary source of vitamin C, minerals, and amino acids. The edible fruit tissue contains protein concentration 3-fold and ascorbic acid concentration 160- hiifold compared to that of the apple. The fruit also contains considerably higher concentration of most minerals and amino acids than apples. The pulpy portion of fruit, dried and freed from the nuts contains: gallic acid 1.32%,

tannin, sugar 36.10%; gum 13.75%; albumin 13.08%; crude cellulose 17.08%; mineral matter 4.12%; and moisture 3.83%. Tannins are the mixture of gallic acid, ellagic acid, and phyllembin. The alkaloidal constituents such as phyllantidine and phyllantine have also been reported in the fruits. An immature fruit contains indolacetic acid and four other auxins—a1, a3, a4, and a5 and two growth inhibitors R1 and R2.[9] The fruit pulp, which constitutes 90.97 per cent of the whole fruit, contains 70.5 per cent moisture. The total soluble solids constitute 23.8 per cent of the juice. The acidity of aonla is 3.28 per cent on pulp basis. The pulp contains 5.09 percent total sugars and 5.08 per cent reducing sugars. The ascorbic acid content is 1,094.53 mg per 100 ml of juice. The tannins and pectin content of the pulp is 2.73 per cent and 0.59 per cent respectively.[10] The fruit pulp contains 0.75 per cent protein. The mineral content of the edible portion, as represented by its ash, is 2.922 per cent. The percentage content of the mineral elements, viz. phosphorus, potassium, calcium, magnesium, and iron is 0.027, 0.368, 0.059, 0.248 and 0.004 respectively. Amla is one of the most extensively studied plants. Reports suggest that it contains tannins, alkaloids and phenols. Fruits have 28% of the total tannins distributed in the whole plant. The fruit contains two hydrolysable tannins Emblicanin A and B, which have antioxidant properties; one on hydrolysis gives gallic acid, ellagic acid and glucose wherein the other gives ellagic acid and glucose respectively. The fruit also contains Phyllembin. Activity directed fractionation revealed the presence of several phytochemicals like gallic acid, corilagin, furosin and geraniin [11,12].



The fruit also contains higher concentration of most minerals and amino acids than apples. Fruit ash contains chromium, Zinc and copper. It is considered as adaptogenic that improves Immunity.[13] Leaves: It contains gallic acid, chebulic acid, ellagic acid, chebulinic acid, chebulagic acid, amlic acid, alkaloids phyllantine and phyllantidine.[8] Seeds: A fixed oil, phosphatides and a small quantity of essential oil. Its Contains linolenic acid (8.78%), linoleic (44%). Oleic (28.40%), steric (2.15%), palmitic (2.99%) and miristic acid (0.95%).[8] Barks. Contain leukodelphinidin, tannin and proanthocyanidin.[8] Roots: Contain pelagic acid and lupeol. Flowers: Greenish-yellow, in axillary fascicles on the leaf bearing branchlets, often on the naked portion below the leaves. Fruits- Fleshy, globose, with obscure vertical furrow, pale yellow.[8] Part used – Root Bark, Stem bark, leaf, Fruit, Seed Chebulagicacid.

TABLE 3: AVERAGE PERCENTAGE COMPOSITION OF THE FRUIT PULP OF EMBLICA OFFICINALIS

Chemical constituents	Percentage (%)
Carbohydrates	14.1 %
Protein	0.5%
Fat	0.1%
Fibres	3.7%
Mineral matters	0.7%
Calcium	0.05%
Phosphorus	0.02%
Iron	1.5mg/100gm
Vitamin C	600mg/100gm
Nicotinic acid	0.2mg/100g

Chemical constitute % Carbohydrate 14.1 Protein 0.5 Fat 0.1 Fibers 3.7 Mineral matter 0.7 Calcium 0.05 Phosphorus 0.02 Iron 1.5mg/100g Vitamin C 600mg/100g Nicotinic acid 0.2mg/100g PHYTOCHEMISTRY: This herb has many bioactive compounds including apigenin, gallic acid, ellagic acid, chebulinic acid, quercetin, chebulagic acid, corilagin, isostrictiniin, methyl gallate, luteolin and so on. Emblicanin A, emblicanin B, phyllaemblicin B, punigluconin and pedunculagin are tannins present in *Emblica officinalis* (4). Glutamic acid, proline, aspartic acid, alanine, and lysine are 29.6%, 14.6%, 8.1%, 5.4% and 5.3% respectively of the total amino acids. The pulpy portion of fruit, dried and freed from the nuts contains: gallic acid 1.32%, tannin, gum 13.75%; albumin 13.08%; crude cellulose 17.08%; mineral matter 4.12% and moisture 3.83%. Amla fruit ash contains chromium, 2.5 ppm; zinc 4 ppm; and copper, 3 ppm (Kumar et al., 2012a). Nickel and lead metals were not found in leaves of *Emblica officinalis*. The level of copper was found higher in the sample leaves of *Emblica officinalis* followed by chromium, manganese and zinc (Kumar et al., 2013). Chemical constituents from different plant parts of are illustrated below [14] Carotenoids Carotenoids, with their ps. Carotenoid intake has been associated with a reduced risk of cardiovascular diseases, age –related cataract and macular degeneration and some forms of cancer. Although, 600 carotenoids have been characterized in nature, those found most concentrated in human blood and tissues are α - and β -carotene β -cryptoxanthin, lutein, lycopene and zeaxanthin. Although low concentrations of carotenoids are present in several nuts, they are not a major source of dietary [15] Carotenoids; however, β -carotene and lutein are found in pistachios at 0.21 and 2.32 mg/100 g dry weight. Phenols Plant phenols, including simple phenolic acids, flavonoids, stilbenes and a variety of other polyphenolic compounds, possess hydroxyl groups conjugated to an aromatic hydrocarbon group. Phenolic compounds are ubiquitous in plant foods with total daily intakes estimated at 500-1000 mg. The reduction in the risk of several chronic diseases associated with the consumption of plant phenols has been attributed to their array of bio-mechanisms, including anti-oxidation, antiinflammation, carcinogen detoxification and cholesterol reduction. The total phenol content among nuts varies widely, with pecans, pistachios and walnuts being the richest sources and Brazil nuts, macadamias and pine nuts containing the lowest concentrations.[15]

1. THERAPEUTIC USES:

[17] Immunity booster One reason for amla's reputation as a general energy-promoting, disease-preventing tonic may be its effect on the immune system. Multiple studies have shown significant increases in white blood cell counts, and other measures of strengthened immunity in rodents given amla.[18] Respiratory disorders Indian gooseberry is beneficial in the treatment of respiratory disorders. It is especially valuable in tuberculosis of lungs asthma and bronchitis.[18] Diabetes This herb, due to its high Vitamin C content, is effective in controlling diabetes. A tablespoon of its juice mixed with a cup of bitter gourd juice, taken daily for 2 months will stimulate the pancreas and enable it to secrete insulin, thus reducing the blood sugar in diabetes. Diet restrictions should be strictly observed while taking this medicine. It will also prevent eye complication in diabetes. Oral administration of the extracts (10dy weight) reduced the blood sugar level in normal and in alloxan (120 mg/kg) diabetic rats significantly within 4 hours. EO and an enriched fraction of its tannoids are effective in delaying development of diabetic cataract in rats [18]. Heart disorder Indian gooseberry is considered an effective remedy for heart disease. It tones up the functions of all the organs of the body and builds up health by destroying the heterogeneous or harmful and disease causes elements. It also renews energy. [18,19] Eye disorder The juice of Indian gooseberry with honey is useful in preserving eyesight. It is beneficial in the treatment of conjunctivitis and glaucoma. It reduces intraocular tension in a remarkable manner. Juice mixed with honey can be taken twice daily for this condition.[19] Aging Indian gooseberry has revitalizing effects, as it contains an element which is very valuable in preventing aging and in maintaining strength in old age. It improves body resistance and protects the body against infection. It strengthens the heart, hair, and different gland in the body.[19] Amla/treats hypertension Amla is rich in Vitamin C and helps control blood pressure. You can have it as amlachoorana (powder) or in the form of triphala tablets or decoction.

Good for the skin Because Amla-Berry strengthens digestion, helps the liver detoxify, and is rich in Vitamin C and other minerals, it is very good for the complexion. Amla-Berry moisturizes the skin, cleanses the tissues of toxins, and supports immunity of the skin against bacterial infection. It helps to enhance glow and luster.[8] Promotes healthier hair Amla-Berry boosts absorption of calcium, thus creating healthier bones, teeth, nails, and hair. It also helps to maintain youthful hair color and retards premature greying, and supports the strength of the hair follicles, so there is less thinning with age. The crushed fruits have a good effect on hair growth and prevent hair greying. Acts as a body coolant Although Amla-Berry is good for all doshas and seasons, it is especially effective in the hot season to cool pitta dosha. It is especially good rasayana for people with pitta and vata body types. In Tibetan medicine, the fruit has been described as having a sour taste with cooling potency. Diarrhea It is used medicinally for the treatment of diarrhea. As a fruit decoction, it is mixed with sour milk and given by the natives in cases of dysentery.

2. PHARMACOLOGICAL ACTIVITY:

Some different activities of amla: Amla possesses some different activities – Anticancer activity, antianaemic activity, hepatoprotective activity, antidiarrheal activity, antimicrobial activity, hypolipidemic activity, insecticidal activity, antioxidant activity, antiageing activity, antidiabetic activity (hypoglycemic activity), cardioprotective activity, antiulcer activity, anti-pyretic, analgesic activity, antiinflammatory activity, memory enhancing activity, radioprotective activity etc. [25,26,27] Antianaemic activity: 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. [25,26,27] Antidiarrheal activity for children A compound powder of the emblic seed, Chitrak root, chebulicmyrobalan, pipli 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. [25,26,27] 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. [25,26,27] Antioxidant and free radical scavenging activity: Galic acid equivalent as total phenolic content from fruit and seed of *E. officinalis* has excellent antioxidant properties and play an important role as free radical scavengers required in the maintenance of 'redox homeostasis' responsible for diverse degenerative diseases with milk.[28] It is a wonderful antioxidant and a natural Source of Vitamin C. Amla helps scavenge free radicals. Insecticidal activity: Saponins which are important constituents of *E. officinalis* have insecticidal or cytotoxic properties to certain insects.[29] Hypolipidemic activity: Amla fruit have been reported to have significant anti-hyperlipidemic, hypolipidemic, and antiatherogenic effect.[30] Treatment with *Emblicaofficinalis* caused significant reduction of Total Cholesterol (TC), Low Density Lipoprotein (LDL), triglyceride (TG) and Very Low-Density Lipoprotein (VLDL), Amla is powerful food for the brain and helps lower cholesterol. Hepatoprotective activity: EO fruits have been reported to be used for hepatoprotection in Ayurveda. *Phyllanthusemblica* extract was investigated on ethanol induced rat hepatic injury. [31] Protective roles of this against ethanol induced injury in rats are reported. A hydroalcoholic (50%) extract of fruit of EO (EO-50) decreased the severity of hepatic fibrosis induced by thioacetamide and carbon EO-50 effectively reversed profibrogenic events possibly due to its antioxidative activity. Hepatoprotective effect of EO-50 against antituberculosis into the body (anti-TB) drugs-induced hepatic injury has been reported. EO-50 exhibits hepatoprotective activity due to its membrane stabilizing, antioxidative and CYP 2E1 inhibitory roles. EO also inhibited hepatic toxicity in Wistar rats.

3. Antidiabetic and hypoglycemic activity:

Herbal formulations prepared by extracts of *Tinosporacordifolia*, *Trigonellafoenum* and *Emblicaofficinalis* were evaluated for hypoglycemic effects and Oral Glucose Tolerance Test (OGTT) in normal and Alloxan induced diabetic rats and significant, marginal and very less decrease in blood glucose level was observed when different herbal combinations weractivity.

4. Anticancer activity:

Amla inhibits the growth and spread of various cancers like breast, uterus, pancreas, stomach and liver cancers. It can prevent and/or reduce the side effects of chemotherapy and radiotherapy.21, 39 More than 18 compounds were identified in amla fruit which can exert anti-proliferative activity on gastric and uterine cancer cellscell.

5. Anti-ageing activity:

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.booster.

6. Cardioprotective activity:

The effects of chronic oral administration of fresh fruit homogenate of Amla on myocardial antioxidant system and oxidative stress induced by ischemic-reperfusion injury (IRI) were investigated on heart in rats. Chronic EO administration produces myocardial adaptation by augmenting endogenous antioxidants and protects rat hearts from oxidative stress associated with IRI.

7. Anti-ulcer activity:

A herbomineral formulation of the Ayurveda medicine named Peptic are, composed of EO, *Glycyrrhizaglabra* and *Tinosporacordifolia* was tested for its anti-ulcer and anti-oxidant activity in rats.[36] Reports were made that Peptic are exhibit anti-ulcer activity, which can be attributed to its anti-oxidant property. Methanolic extract of EO (EOE) was studied against ulcer. EOE had significant ulcer protective and healing effects and this might be due to its effects both on offensive and defensive mucosal factofactor.

8. Antipyretic and Analgesic Activity;

Extracts of EO fruits possess potent anti-pyretic and analgesic activities. A single oral dose of ethanolic extract and aqueous extract (500 mg/kg, i.p.) showed significant reduction in hyperthermia in rats induced by brewer's yeast. Both of these extracts elicited pronounced inhibitory effect on acetic acidinduced writhing response in mice in the analgesic test. This may be due to the presence of tannins, alkaloids, phenolic compounds, amino acids and carbohydrates.[38] Amla as Snake Venom Neutralizer Amla and *Vitexnegundo* were explored for the first time for antisnake venom activity. *Najakaouthia* and *Viperarusselliipvenom* was antagonized by the plant extracts significantly both in vivo and in vitro studies. *V. russellii* venom-induced coagulant, haemorrhagedenitrogenating and inflammatory activities were significantly neutralized by both plant extracts. No precipitating bands were formed between the snake venom and plant extract which confirmed that the plant extracts possess potent snake venom neutralizing capacity and need further investigation.[39] Amla 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 amla powder and small amount of sugar mixed with milk or water twice a day. [40,41,42] Action on toxins Some of the toxins may be stored in liver by regular uptake of pain killers, antibiotics, medication and alcohol consumption. Amla prevents the body from these toxins by strengthening the

liver thereby amla act as good detoxifier helps to purify the blood.[42] Memory Enhancing activity: Amlachurna produced a dose-dependent improvement in memory of young and aged rats. It reversed the amnesia induced by scopolamine and diazepam. Amlachurna may prove to be a useful remedy for the management of Alzheimer's disease due to its multifarious beneficial effects such as memory improvement and reversal of memory deficits. [43,44] Anti-arthritis activity: Amla has anti-inflammatory property. Its use has been found beneficial in reducing inflammation in arthritis and other rheumatic conditions.

9. Conclusion & Discussion:

Amla is one of the richest natural sources of vitamin C its fresh juice containing nearly twenty times as much vitamin C compare to orange juice. Amla Tonic have different function it is useful in Scurvy and Jaundice prevents Indigestion and controls acidity as well as it is a natural source of anti-ageing. The major group of phytochemicals of like tannins, flavonoids, terpenoids, tannins and other polyphenolic compounds extracted from Amla. Some important Amla phytochemicals like gallic acid, ellagic acid, emblicanin A, emblicanin B, quercetin, phyllantine, phyllantidine and so forth have been confirmed as having different biological activities like antioxidant, antimicrobial-al, anti-inflammatory, antidiabetic, antitussive, anti, radioprotective, chemopreventive, wound healing activity *Emblicoefficialis* (Amla) has an important position in Ayurveda siddha and unani system of medicine due to its strong antioxidant activity and biological properties, prevent health disorders and it contains essential nutrients and highest amount of vitamin C. *E. officinalis* in the overall useful for the maintenance of health and protection from disease. Amla can be safely used in the treatment of mild to moderate cases of hyperlipidaemia, heart disease, cancer disease etc and it is easily available, no cost effective, and other beneficial effects.

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