

***Emblica officinalis* [Syn: *Phyllanthus Emblica*] or Amla: the Ayurvedic wonder**

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Introduction

The world craves new ideas and looks to the Far East and Asia for inspiration and innovation. One Indian plant stands out as being exceptional for its ethnic, ethnobotanical and ethnopharmaceutical use. There is a wealth of technical data to support the safe use of this plant and in this review a monograph will be produced that justifies the use of this plant in a wide range of personal care applications.

Background

Family: Euphorbiaceae

Latin names: *Phyllanthus emblica* Linn., *Emblica officinalis* Gaertn., *Phyllanthus laxifolius* Don., *Cicca emblica* Kurz, *Dichelastina nodicaulis* Hance.

Emblica fruits are one of three "myrobalans," a term deriving from the Greek for acorn, which is a well-known astringent used in tanning. In fact, both emblic myrobalans and chebulic myrobalans (*Terminalia chebula*) are relied upon for their high content of tannins; chebulic myrobalans have long been used for tanning leather. The third fruit, beleric myrobalans, is a close relative of the chebulic myrobalans (*Terminalia belerica*) and this too is a tanning agent. These three fruits together make up the popular remedy "*Triphala*," a rejuvenating formula that is often applied to treating intestinal disorders (inflammation, infection, diarrhoea and constipation).

Description.

Tree; leaves alternate, bifarious, pinnate, flower -bearing; leaflets numerous, alternate, linear-obtuse, entire; petioles striated, round; calyx 6-parted; flowers in the male very numerous in the axils of the lower leaflets, and round the common petiole below the leaflets; in the female few, solitary, sessile, mixed with some males in the most exterior floriferous axils; stigmas 3; drupe globular, fleshy, smooth, 6-striated; nut obovate-triangular, 3-celled; seeds 2 in each cell; flowers small, greenish yellow. Flowers during October.

The common names

Arab. Amlaj.; **Assam.** Amluki.; **Ayurvedic:** Amalaki; **Beng.** Amia, Amlaki, Amla, Arnloki.; **Bom.** Amla, Avalkati.; **Burm.** Ziphayu-si; Shabju.; **Engl.** Emblic, Myrobalan Tree, Indian gooseberry; **Fr.** Phyllanthe, Emblic.; **Ger.** Gebrauchlicher, Amlabaum, ; **Guj.** Ambala; Amla. **Hindi.** Amalaci, Amla, Amlika, Amlaki, Anola, Anuli, Anvula, Anvurah, Anwera, Aonla, Aoula, Aungra, Aunra, Daula, Arooli, Aoongra; **Kash.** Aonla.; **Mab. & Gwalior.** Avla; (seed) Avalkati. ; **Mal.** Nellee, Nellikai, Arnlakam.; **Nepal.** Amla.; **Pers.** Amala; Amuleh; Amial. **Punj.** Ambli, Ambul, Ambal, Amla. ; **Sans.** Adiphala, Akara, Amalaki, Amalakam, Amamalakam, Amlika, Amraphala, Amraphalam, Amrita, Amritaphala, Bahuphali, Dhatri, Dhatrika, Dhatriphala, Jatiphala, Karshaphala, Kayastha, Pancharasa, Rochani, Shanta,

Shiva, Shriphala, Striphalam, Shriphali, Tishya, Tishyaphala, Triphala, Vayastha, Vrishya, Vrittaphala.; **Santal**. Meral.; **Sinh**. Ambula, Awusada-nelli, Nelli, Nellikai; **Tam**. Amalagam. Andakoram, Indul, Kattunelli, Nelli, Perunelli, Sirottam, Tattiri, Toppunelli, Nelle-kai, Toppi; Nellik-kai; **Tel**. Assereki, Nelli, Usrikayi, Amalakamu; Usiri, Usereki. ; **Tibetan**. Kyou-rhoo-rah; **U.P.** Amla, Asula.; **Unani**. Amia; **Uriya**. Amlaki.

The Tamil name may be translated as *Beautiful Fruit* whilst its Sanskrit name, Amlaki, translates as the *Sustainer* or *The Fruit where the Goddess of Prosperity Resides*. In Hindu religious mythology the tree is worshipped as the *Earth Mother* as its fruit is considered to be so nourishing as to be the nurse of mankind [Onions].

Habitat

The Deccan, the sea-coast districts and Kashmir [Nadkarni and Nadkarni]. It is common all over tropical and sub-tropical India and also found in Burma [Dey], it is abundant in deciduous forests of Madhya Pradesh [Thakur]. Grows in tropical and subtropical parts of Ceylon, Malay Peninsula and China. In Ceylon, it is very common in exposed places on patana land in the moist regions up to 4000 feet altitude [Jayaweera].

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 be weak then the body is weak. 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 Galenical 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. The seven *dhatu*s 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*).

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.

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.

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

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 [Williamson].

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 [Bajracharya].

Chemical constituents

The fruit is a very rich source of vitamin C according to most if not nearly all references, this is probably not the case [Ghosal, 1996]. It was proposed that superior effect of the mistaken

"vitamin C" component is actually the more stable and potent anti-oxidant effect of the tannins that appeared to be the vitamin.

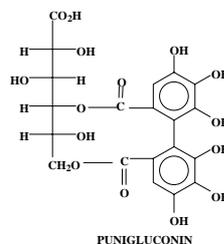
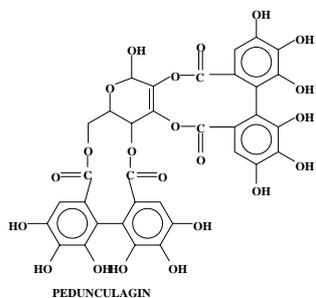
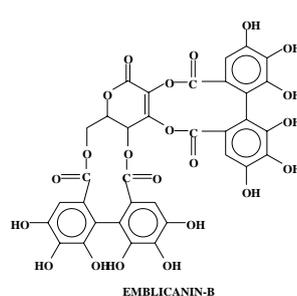
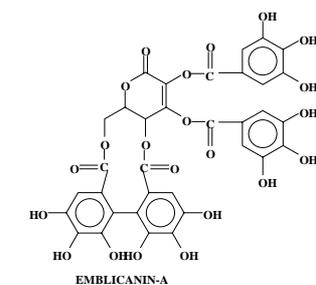
A repeated laboratory test showed that every 100g of fresh fruit provides 470 - 680mg of vitamin C. The vitamin value of amla increased further when the juice was extracted from the fruit. The dehydrated berry provided 2428 - 3470mg of vitamin C per 100g.

Its mineral and vitamin contents include calcium, phosphorous, iron, carotene, thiamine, riboflavin, and niacin. The seeds of the Indian gooseberry contains a fixed oil, phosphatides, and an essential oil. The fruits, bark, and the leaves of this tree are rich in tannin.

The fruits, leaves and bark are rich in tannins. The root contains ellagic acid and lupeol and bark contains leucodelphinidin. The seeds yield a fixed oil (16%) which is brownish-yellow in colour. It has the following fatty acids: linolenic (8.8%), linoleic (44.0%), oleic (28.4%), stearic (2.15%), palmitic (3.0%) and myristic (1.0%) [Thakur *et al*].

The ethanol soluble fraction contains free sugars, D-glucose, D-fructose, D-myo-inositol. The acidic water soluble fraction contains a pectin with D-galacturonic acid, D-arabino-5I, D-

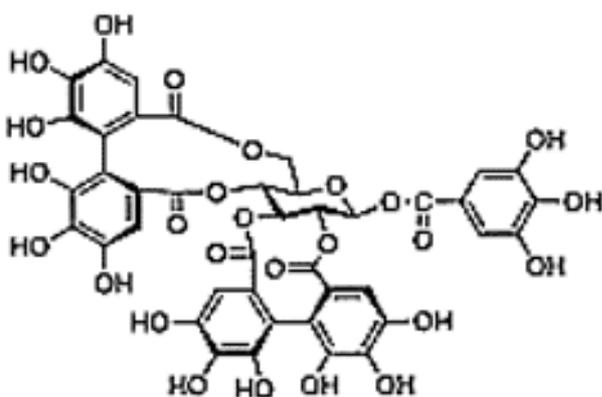
rhamnosyl, D-xylosyl, D-glucosyl, D-mannosyl and D-galactosyl residues [Thakur *et al*].



The low molecular weight hydrolyzable tannins (<1,000), namely Emblicanin A and Emblicanin B, along with pedunculagin and punigluconin are the key ingredients in Emblica [Chaudhuri, 2004]. Figure shows structure of pedunculagin, one of the ellagitannins of emblica. Each of the ring structures is a phenol, gallic acid

[Dharmananda].

3-6-di-o-galloyl-glucose (Fruit), 3-6-di-o-galloyl-glucose (Shoot), Alanine (Fruit), Amlaic-acid (Leaf), Arginine (Fruit), Ascorbic-acid (Fruit), Ascorbic-acid (Plant), Ash (Fruit), Aspartic-acid (Fruit), Astragalol (Leaf), β -carotene (Fruit), β -sitosterol (Bark, Seed Oil, Tissue Culture, Shoot), Boron (Fruit), Calcium (Fruit), Carbohydrates (Fruit), Chebulagic acid (Fruit), Chebulagic acid (Shoot), Chebulaginic acid (Fruit), Chebulic acid (Fruit), Chibulnic acid (Fruit), Chibulnic acid (Shoot), Chloride (Fruit), Copper (Fruit), Corilagic acid (Fruit), Corilagin (Fruit, Shoot), Cystine (Fruit), D-fructose (Fruit), D-glucose (Fruit), Ellagic acid (Fruit, Shoot, Root, Pericarp and Leaf), Emblicol (Fruit, Pericarp), Ethyl gallate (Fruit), Fat (Fruit and



Seed), Fibre (Fruit), Gallic acid (Fruit, Shoot, Pericarp), Gallic acid ethyl ester (Fruit, Tissue Culture), Gallo-tannin (Leaf), Gibberellin-a-1 (Fruit), Gibberellin-a-3 (Fruit), Gibberellin-a-4 (Fruit), Gibberellin-a-7 (Fruit), Gibberellin-a-9 (Fruit), Glucogallin (Fruit), Glucogallin (Shoot), Glucose (Fruit), Glutamic acid (Fruit), Glycine (Fruit), Histidine (Fruit), Iron (Fruit), Isoleucine (Fruit), Kaempferol (Leaf), Kaempferol-3-o-glucoside (Leaf), Leucine (Fruit), Leucodelphinidin (Bark), Linoleic acid (Seed, Seed Oil), Linolenic acid (Seed, Seed Oil), Lupenone (Plant), Lupeol (Bark, Root, Shoot), Lysine (Fruit), Magnesium (Fruit), Manganese (Fruit), Methionine (Fruit), Myo-inositol (Fruit), Myristic acid (Fruit, Seed Oil), Niacin (Fruit), Nitrogen (Fruit), Oleic acid (Seed, Seed Oil), Palmitic acid (Seed, Seed Oil), Pectin (Fruit), Phenylalanine (Fruit), Phosphorus (Fruit), Phyllantidine (Fruit, Tissue Culture, Leaf), Phyllantine (Fruit, Leaf, Tissue Culture), Phyllemblic acid (Fruit, Pericarp), Phyllemblin (Fruit), Phyllemblic acid (Fruit), Polysaccharide (Fruit), Potassium (Fruit), Proline (Fruit), Protein (Fruit), Quercetin (Tissue Culture), Riboflavin (Fruit), Rutin (Fruit, Leaf), Selenium (Fruit), Serine (Fruit), Silica (Fruit), Sodium (Fruit), Starch (Fruit), Stearic acid (Seed, Seed Oil), Sucrose (Fruit), Sulfur (Fruit), Tannin (Bark, Fruit, Twig, Leaf), Terchebin (Fruit), Thiamin (Fruit), Threonine (Fruit), Trigalloyl glucose (Fruit), Tryptophan (Fruit), Tyrosine (Fruit), Valine (Fruit), Water (Fruit), Zeatin (Fruit), Zeatin nucleotide (Fruit), Zeatin riboside (Fruit). Zinc (Fruit) [Duke; Summanen].

Preparations

The plant is used in many forms. One of the most popular is as a decoction and infusion of leaves and seeds. However, it is also used as a liquor, a fixed and an essential oil; in confection; as a powder and also in paste and pickles. It makes an astringent extract equal to catechu, which is prepared from the root by decoction and evaporation. The fresh juice of the round, acidulous fruit is used in combination with that of other Myrobalans – chebulic (*Terminalia chebula*) and Beleric (*Terminalia belerica*) in the form of a decoction known as *Triphala* (three fruits). It is used as a cooling and refrigerant *sherbet*, and as an astringent medicine in diarrhoea, haemoptysis (spitting blood), haematemesis (vomiting blood) and other similar conditions [Dey].

Description of the plant

The green fruit is described as being exceedingly acid. The dried fruit is sour and astringent. The flowers are cooling and aperient. The bark is astringent [Nadkarni & Nadkarni]. There are two forms of Amla, the wild one with smaller fruits and the cultivated form sometimes called "Banarsi" with larger fruits [Thakur].

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.

Uses of Amla

Indian gooseberry has been used as a valuable ingredient of various medicines in India and Middle East from time immemorial.

Aperient

The green fruits are made into pickles and preserves to stimulate the appetite.

Antibacterial, antifungal, antiviral

Medical studies conducted on Amla fruit suggest that it has antiviral properties [Udupa] and also functions as an antibacterial and anti-fungal agent [Treadway].

Antioxidant

The use of amla as an antioxidant has been examined by a number of authors [Bhattacharya; Chaudhuri]. Experiments conducted at the Niwa Institute of Immunology in Japan have shown Amla to be a potent scavenger of free radicals. The studies showed that Amla preparations contained high levels of the free-radical scavenger, superoxide dismutase (SOD), in the experimental subjects [Treadway].

Aphrodisiac

Amla is believed to increase *ojas*, and is considered to be one of the strongest rejuvenative herbs in Ayurvedic medicine. It is the primary ingredient used in one of the renowned Ayurvedic herbal formulae, called *Chayavanprasha* which has great respect as a tonic. The preparation is named after Chayavan who was sitting in the forest when the Emperor's daughter who was playing while blindfolded in the forest fell over him. Not knowing he was a stranger, she ran her fingers through his hair and decorated him with a garland of flowers, which must have been quite an accomplishment while wearing a blindfold! Needless to say, her father found out and insisted that the wise old sage marry his daughter (as a woman was only allowed to be touched by one woman in her lifetime). The old sage created *chayavanprasha* and lived on it for 2 months, during which time he regained youthfulness and sexual vitality [Watson]. Beside amla, *chayavanprasha* contains around 30 to 50 other herbs depending on where it is prepared.

For sexual rejuvenation, stir *Chyavanprash* into warm milk or spread on toast, and consume every day.

Boils and spots

The pericarp of the fruit is often used in decoctions along with other ingredients and also applied externally on boils with cow ghee to promote suppuration [Jayaweera].

Chelating agent

Photoaging of the skin is a complex biologic process affecting various layers of the skin with major changes seen in the connective tissue within the dermis. Emblica was shown to reduce UV-induced erythema and had excellent free-radical quenching ability, chelating ability to iron and copper as well as MMP-1 and MMP-3 inhibitory activity [Chaudhuri, Gutierrez, and Serrar, 2003]

Constipation

The fruit is occasionally pickled or preserved in sugar. When dry it is said to be gently laxative [Drury], according to some sources the fresh fruit is also laxative [Nadkarni & Nadkarni]. The fresh ripe fruits are used extensively in India as a laxative, one or two fruits being sufficient for a dose.

They have been exported to Europe, preserved in sugar, and are valued as a pleasant laxative for children and made into a confection consisting of the pulp of the de-seeded fruit [Ley].

Fruits along with those of *Terminalia bellirica* and *T. chebula* are the constituents of "Triphala" which are used as a laxative [Thakur].

Dental problems

The roots of *Emblica officinalis* (10 g) are ground and taken twice daily for one day only after taking food. Alternatively, the leaves of *Emblica officinalis* are squeezed and the juice extracted. This juice is put in the ear (a few drops) to find relief from toothache. A final alternative is to grind the node of a *Emblica officinalis* and mix it with water. After vigorous stirring it is filtered through a cloth. This water is put drop by drop in the right ear if the teeth on the left hand side are in pain and *vice versa*. The remedy is continue for three days.

Diabetes

The fruits are used in the treatment of diabetes [Drury] and in other references an infusion of the seeds are also used [Nadkarni & Nadkarni]. Decoctions of the leaves and seeds are used in the treatment of diabetes mellitus [Treadway].

Diarrhoea

It is used medicinally for the treatment of diarrhoea. As a fruit decoction it is mixed with sour milk and given by the natives in cases of dysentery [Drury]. The bark partakes of the astringency of the fruit. A decoction and evaporation of the root solution produces an astringent extract equal to catechu [Nadkarni & Nadkarni]. An infusion of the leaves with fenugreek seed is given for chronic diarrhoea [Jayaweera].

Diuretic

The fresh fruit is diuretic [Nadkarni & Nadkarni]. A paste of the fruit alone or in combination with *Nelumbium speciosum* (the Egyptian Lotus), Saffron [author's note: more likely to be *Curcuma longa* (Indian saffron) than *Crocus sativus* (saffron)] and rose water is a useful application over the pubic region in irritability of the bladder, in retention of urine. A sherbat prepared from the fresh fruit with (or without) raisins and honey is a favoured cooling drink which has a diuretic effect. A decoction of the fruit with stems of *Tinospora cordifolia* is a well-known remedy for various urinary diseases [Jayaweera].

Fevers

Malays use a decoction of its leaves to treat fever [Burkill 1966]. The fresh fruit is refrigerant [Nadkarni & Nadkarni]. The seeds are given internally as a cooling remedy in bilious affections and nausea, and in infusion make a good drink in fevers [Drury; Nadkarni & Nadkarni]. The flowers are employed by the Hindoo doctors for their supposed refrigerant and aperient qualities. Often after a fever there is a loss of taste and a decoction of the emblic seed, dried grapes and sugar is used for gargling. A decoction of the emblic seed, chitrak root (*Plumbago zeylanica* or Leadwort), chebulic myrobalan and *pipli* (*Piper longum*) is given in fevers and there is also a compound powder composed of equal parts of the emblic seed (*Emblica officinalis*), chitrak root, chebulic myrobalan, *pipli* and *saindhava* (rock salt) which may also be used.

Gonorrhoea

The juice of the bark combined with honey and turmeric is a remedy for gonorrhoea [Jayaweera; Nadkarni&Nadkarni].

Hair growth

A fixed oil is obtained from the berries that is used to strengthen and promote the growth of hair. The dried fruits have a good effect on hair hygiene and have long been respected as an ingredient of shampoo and hair oil [Thakur *et al*]. Indian gooseberry is an accepted hair tonic in traditional recipes for enriching hair growth and also pigmentation. A fixed oil obtained from the berries strengthens and promotes the growth of hair. The fruit, cut into pieces, is dried, preferably in shade and then boiled in coconut oil, the resulting oil is said to be excellent for preventing hair greying – in Ayurvedic terms, a classic sign of excess *pitta dosha*. The water in which dried amla pieces are soaked overnight is also said to be nourishing to the hair.

Headache

A *paste* of the fruit is a useful application to the forehead in cases of cephalalgia (headache). The name "Itrifal" of Unani medicine is the same as "Triphala" in the Ayurvedic system and represents a group of preparations used for the care of all manner of cranial conditions [Thakur *et al*]. The expressed juice of the fruit along with other ingredients is used to cure fits and insanity [Jayaweera]. In Indonesia, the pulp of the fruit is smeared on the head to dispel headache and dizziness caused by excessive heat (Perry, 1980). Amla is mixed with buttermilk for anointing and "cooling" the head [Treadway].

Indigestion

Fruit is carminative and stomachic [Nadkarni & Nadkarni]. The tender shoots given in buttermilk cure indigestion and it is known that green fresh leaves combined with curds have similar effect.

Inflammation

P. emblica L. has been used for anti-inflammatory and antipyretic treatments by rural populations in its growing areas [Burkill 1966].

Mouth ulcers

A decoction of the leaves is used as a chemical-free bactericidal mouthwash [Treadway]. Bark of the root mixed with honey is applied to aphthous inflammations of the mouth [Drury] and a decoction of the leaves is also useful as a mouth wash in the treatment of aphthae [Nadkarni & Nadkarni]. Another remedy suggest root bark rubbed with honey is used in aphthous stomatitis (an inflammation of the mouth) [Nadkarni & Nadkarni].

Nausea

Amla powder is mixed with red sandalwood (*Pterocarpus santalinum*) and prepared in honey to relieve nausea and vomiting [Treadway].

One tola (a unit of weight used in India, equal to the weight of one silver rupee 11.7 grams or 180 troy grains) of the seeds soaked in a tinned vessel during the night, and ground next morning, with cow's milk and taken in 7 tolas or 1/4 seer of milk (one seer in India was 0.9331 kg) is a good remedy for biliousness. Another remedy for this condition is to take the fruit which is often dried and used as a medicine and can also be used cooked, preserved and used in pickles, or made into confection.

Nose bleed

The seed are fried in ghee and ground in *conjee* (the liquid from boiled rice) is applied to the forehead to stop bleeding from the nose.

Perfumery

An essential oil is distilled from the leaves that is used in perfumery.

Pruritis

The seed are burnt, powdered and mixed in oil as a useful application for scabies or itch.

Respiratory problems

The fresh fruit is used in Turkeystan in inflammations of the lungs. The juice or extract of the fruit is mixed with honey and pipit added is given to stop hiccough and also in painful respiration. The expressed juice of the fruit along with other ingredients is used to cure cough, hiccough, asthma and other diseases [Jayaweera]. Dyspnoea (breathing difficulty): The following materials are all ground into a paste - *Emblica officinalis* (10g leaves), *Terminalia chebula* (5 fruits), *Piper nigrum* (9 seeds), one garlic, 25 ml ghee (made from cow's milk) and a clove. Take the paste orally once daily for seven days to get relief. It is also used for oligopnoea (shallow or infrequent breaths).

Scurvy

Anti-ascorbic virtues have been attributed to the fruits, which are known as the Emblic Myrobalans.

Skin sores and wounds

The milky juice of the leaves is a good application to sores. Grind the bark of *Emblica officinalis* (10g) into a paste and apply to the cut or wound area once daily for 2 to 3 days. Alternatively, squeeze *Emblica officinalis* leaves and extract the juice to the cut once daily for 3 to 4 days. Healing occurs when the dynamic harmony of the *doshas* is restored [Treadway].

Skin whitening

Skin lightening agents have been widely used to either lighten and depigment the skin in the Asia, Far East and Middle East countries, whereas in the European market products tend to be employed for age spots and freckles. The effectiveness of a standardized antioxidant fraction of *Phyllanthus emblica* fruits as a skin lightener and also as an antioxidant was proven [Chaudhuri, 2004]

Sore eyes

Infusion of the leaves is applied to sore eyes [Drury]. The dried fruit immersed in water in a new earthen vessel a whole night yields a decoction which is used as a *collyrium* (a medical lotion applied to the eye as an eyewash) in ophthalmia. It may be applied cold or warm [Nadkarni & Nadkarni]. In another treatment an infusion of the seeds is also used as a collyrium and applied with benefit to recent inflammations of the conjunctive and other eye complaints. The exudate collected from incisions made on the fruit is applied externally on inflammation of the eye [Jayaweera]. In Ayurvedic terms it lowers *pitta* without disrupting the other two *doshas* and so amla is frequently used in cataract medicine.

Tonic

The juice of the fresh fruit when mixed with ghee is considered a good restorative tonic. The leaves are used as infusion with fenugreek seeds in chronic dysentery and as a bitter tonic. A powder made from equal quantities of emblic seed and *Withania somnifera* root are given with ghee and honey as a restorative invigorator, especially good for those cold winter days. Half a drachm each of the emblic seed and gokhru (*Tribulus terrestris*) powdered and mixed with 15 grains of essence of gulancha (*Tinospora cordifolia*) and given early morning in ghee and sugar is an equally nutrient tonic. These rejuvenation and longevity tonics are known as the "rasayana".

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.

Worms

In Persia the juice of the fruit is used as a vermifuge and it is generally given with honey; the dose is from 1 to 3 drachms [Nadkarni & Nadkarni].

Miscellaneous

The bark of the tree itself is astringent, and is used for tanning purposes.

TIBET

As a comparison to the Indian tradition we include a brief review of the Tibetan practice.

In Tibetan medicine the fruit of the plant is described as having a sour taste with cooling potency. It is used to balance the three processes of *rLung*, *mKhris-pa*, and *Bad-kan* as it removes *Ngan-khrag*. These processes are not dissimilar to those described in the ayurvedic tradition. It is used as a febrifuge, as an anti-inflammatory and unusually as an anti-diuretic (which is not often seen in herbal literature). It is used against bad *mKhris*, polyuria (frequent urination), and loss of hair [Tsarong].

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