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Review Article

Review On Amla Herbs

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ABSTRACT

The Indian Gooseberry is one of the commonly used plants in the Indian system of medicine. Amla is a wonder superfood, belonging to the genus Phyllanthus L. Which is mainly distributed in tropical areas. It represents a phytochemical reservoir of biologically important molecules. The plant contains tannins, alkaloids, amino acids, carbohydrates, vitamins and organic acids. Various parts of the plant have been used to treat a wide array of diseases. The present article highlights the importance of Phyllanthus emblica in the prevention and treatment of ulcer. Gastrointestinal ulcer results due to an increase in the offensive factors as compared to defensive ulcer protective elements. The fruit extracts possesses potent anti-oxidant potential which is the key to its therapeutic effect. Additionally it is also capable of inducing neo-angiogenesis thereby helping in repair of gastric lesions. The anti-inflammatory potential of the above further accelerates ulcer healing. Owing to its anti-secretory and cyto-protective capacities, phyllanthus emblica either alone or in combination represents a valuable natural strategy to treat several chronic diseases especially ulcer.

INTRODUCTION

Amla commonly known as Indian gooseberry, is a wonder herb and one of the precious gift of nature to human health. It belongs to family Euphorbiaceae.[1] According to believe in Ancient Indian mythology, it is the first tree to be created in the universe.[2] The species is Native to India and also grows in tropical and subtropical regions including Pakistan, Uzbekistan, Srilanka, South East Asia, China and Malaysia. It grows about 8-18m height With thin light grey bark, leaves are simple, light green, sub-sessile, closely set along the Branchless looks like pinnate leaves; flowers are greenish yellow; fruits are globose, fleshy, Pale yellow with six obscure vertical furrows enclosing six trigonous seeds in two seeded three crustaceous cocci.[3] In India, Amla trees are found throughout the forests of tropical area ascending up to 4500 ft on hills.[4,5] Amla is rich in fiber, carbohydrate, iron and is reported as the richest source of Vitamin C.[6] The fruits of EO are widely used in the Ayurveda and are

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believed to increase defense against diseases. It has its beneficial role in cancer, diabetis, liver treatment, heart trouble, ulcer, anaemia and various other diseases. Similarly, it has application as antioxidant, Immunomodulatory, antipyretic, analgesic, cytoprotective, antitussive and gastroprotective. Additionally, it is useful in memory enhancing, ophthalmic disorders and lowering cholesterol level. It is also helpful in neutralizing snake venom and as an antimicrobial. It contains several chemical constituents like tannins, alkaloids and phenols. Among all hydrolysable tannins, Emblicanin A and B; gallic acid, ellagic acid are reported to possess biological activity. 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 disorder.[7] It is enormously used as a tonic to restore the lost body's energy and vigor. 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.[8]

Botanical classification –

Kingdom: Plantae
Order: Malpighiales
Family: Euphorbiaceae, Phyllanthaceae
Genus: Phyllanthus
Species: P. Emblica
Binomial name: Phyllanthus emblica
Botanical name: Emblica officinalis Gaertn

Vernacular Names

Sanskrit: Dhatriphala, Amla, Amalaki, Amalakan, Sriphalam, Vayastha
Hindi: Amla
English: Emblica myroblan
Italian: Mirabolano emblico
German: Amla
French: Phyllanthe emblica
Nepalese: Amba
Chinese: An Mole
Malaysian: Popok Melaka
Portuguese: Mirabolano emblico

Botanical description of amla –

Appearance

Medium sized deciduous tree, 8-18 meters height with thin light grey bark Exfoliating in small thin irregular flakes.[9]

Leaves

Simple, sub sessile, closely set along the branchlets, light green having the Appearance of pinnate leaves.[9]

Fruits

15-20 mm long and 18-25 mm wide, nearly spherical or globular wider than Long and with a small and slight conic depression on both apexes. Mesocarp is Yellow and endocarp is yellowish brown in ripened condition. Fresh fruits are light green and ripe fruits turn light brown in colour. The Average weight of the fruit is 60 -70 g.[2]

Seeds

Four-Six, smooth, dark brown.[2]

Barks

Thick to 12 mm, shining grayish brown or grayish.[2]

Chemical constituents

Fruits-

The fruits of Emblica officinalis are rich in tannins. The fruits have 28% of the total tannins distributed in the whole plant. The fruit contains two hydrolysable Tannins Emblicanin A and B.

[11] Which have antioxidant properties, one on hydrolysis gives Gallic acid, ellagic acid and glucose wherein the other gives ellagic acid and glucose. The Fruit also contains Phyllemblin.[12] 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%).[13] 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 improve Immunity [13].

Leaves-

It contains gallic acid, chebulic acid, ellagic acid, chebulinic acid, chebulagic acid, Amlic acid, alkaloids phyllantine and phyllantidine.[2]

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%).[2]

Barks-

Contain leukodelphinidin, tannin and proanthocy-anidin.[2]

Roots-

Contain ellagic acid and lupeol.[2]

Pharmacological activities of amla -

Anti-ulcer effects

Ulcer is indicated by the manifestation of a sore in the inner lining of the alimentary canal predominantly in the stomach, oesophagus or small intestine. Under normal circumstances, the mucosal barrier of the gastrointestinal tract along with glycoproteins, cell proliferation, prostaglandins, bicarbonate ions & antioxidant enzymes offer protection against ulcer causing agents such as gastric acids, Reactive Oxygen Species (ROS), drugs and biological agents. These hostile factors are carefully prevented from exerting their action by adequate levels of protective barriers and determinants under conditions of homeostasis. The development of ulcer occurs due an imbalance between the hostile and protective factors under conditions of pathological or environmental stres [14]. Interestingly, Phyllanthus emblica has been attributed to ulcer prevention and treatment [15]. The Amla plant especially the fruit has been used to treat an array of ailments such as common cold, fever, gastrointestinal disorders, liver diseases, inflammation and most importantly ulcer. Amla extracts have indeed been documented to increase protective factors including mucus secretion while decreasing gastric Hydrochloric acid and pepsin release [16]. Oxidative insult is one of the major ulcer promoting factors. The Amla fruit possesses potent anti-oxidant action. The most important source of the key natural antioxidant, Vitamin C, is the fruit of Phyllanthus emblica. Adequate intake of Vitamin C has been shown to improve prognosis in a number of chronic diseases including cancer. Moreover, previous reports have documented the ability of Vitamin C to prevent asthma attacks, broncho-spasms, wheezing, respiratory infections, nasal congestion and most importantly ulcer by inhibiting the release of histamine. Ulcerative damage mediates release of proteins and carbohydrates including collagen from the luminal barrier. However, intake of Amla extracts has been shown to promote cytoprotection thereby reducing the release of the above [17]. Free radicals including ROS and lipid oxides and peroxides have been shown to contribute to the etiology of ulcer [18]. It has been observed that hydrolysable tannins, Emblicanin A and B possess anti-oxidant efficacy. These tannins have displayed anti-ulcer actions both in vitro and in vivo. The mechanism behind this antioxidant activity is due to the

recycling of sugar reductone moiety and conversion of the polyphenol into medium and high molecular weight tannins. Furthermore, Amla extracts have also been observed to alter the levels of lipid peroxidation and anti-oxidant enzymes [19]. The phenolic fraction of the fruit has been documented to achieve anti-oxidant dependent would healing activity both in vitro and in vivo [20,21,22] .. Moreover, butanolic fraction of Amla has been shown to reduce Malondialdehyde (MDA), a product of lipid peroxidation and superoxide radical [23]. Additionally, histopathological studies have shown that oral intake of Indian Gooseberry reduces gastric lesions and mucosal injury in vivo. Previous reports have also shown the fruit extract to decrease Myeloperoxidase (MPO) activity which is generally considered as a potent ulcerogenic marker [24]. Pepticare, a herbal formulation containing extracts of Phyllanthus emblica has proven its anti-oxidant mediated anti-ulcer effects in mammalian models [25]. Pepticare has been shown to induce an upregulation of Superoxide Dismutase (SOD), Catalase and reduced Glutathione accompanied by an increase in gastric pH [16, 26]. The anti-oxidant actions of the above have also been shown to decrease ulcer promoting factors and increase the protective factors Another formulation Kalpaamruthaa, consisting of Semecarpus anacardium nut milk extract, dried powder of Phyllanthus emblica fruit and honey has also demonstrated ulcer protective effects [27]. Moreover, quercetin and flavonoids present in Amla juice have also shown to heal ulcer lesions in rat models [28]. The immunomodulatory potential of the fruit also helps to achieve ulcer protection [29]. Inflammatory pathways plays a major role in development of several diseases including ulcer Phyllanthus emblica has proven its efficacy in increasing the concentration of anti-inflammatory cytokines compared to pro-inflammatory cytokines thereby aiding in ulcer therapy. Additionally, Extracts of the Indian gooseberry possess anti- Helicobacter pylori potential [30].

CONCLUSION

Amla is a useful medicinal plant used to treat a wide range of diseases. The importance of the plant in prevention and treatment of ulcer is noteworthy. The extracts of Phyllanthus emblica have proven its efficacy as an anti-ulcer agent both in vitro and in vivo. Ulcer manifests itself due to an imbalance between the hostile and protective ulcer causing agents towards the former. The hydrolysable tannins, phenolic compounds and flavonoids present in the above have been correlated with decreasing inflammatory cytokines, free radicals and H. Pylori activity; all of which are important contributors of gastrointestinal ulcers. Furthermore, the Indian Gooseberry has been shown to upregulate antioxidant enzymes. The fruit extracts have also demonstrated their efficacy in increasing prostaglandin dependent angiogenesis mediated repair of ulcer lesions. Being a natural agent, Amla represents an attractive tool to treat several chronic diseases especially ulcer. The fruit extracts may be used to upgrade commercially available anti-ulcer drugs to provide improved protection and relief. 6. Tables and Figures

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