

A Phytochemical and Pharmacological Review on Emblicaoofficinalis (Amla)

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Abstract: *Emblicaoofficinalis (amla) are widely used in the Idian system of medicine and belived to increase defence against disease. This review systamatically encapsulates the role of amla (Emblicaoofficinalis) in diseases cure and management through reviewing the in vivo and in vitro study. These article discuses and summarised important medicinal value of emblicaoofficinalis. Emblicaoofficinalis are used to treat a range of diseases, but the most important is the fruit. 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 adigestive antipyretic, analgesic, antitussive, antiatherogenic, adaptogenic, cardioprotective, gastroprotective, antianemia, antihypercholesterolemia, wound healing.*

Keywords: Euphorbiaceae, Amla, Encapsulation, Medicinal Values

I. INTRODUCTION

This consists of dried, as well as fresh fruits of the plant *Emblicaoofficinalis* Gaerth (*Phyllanthusemblica* Linn) belonging to family Euphorbiaceae. *Emblicaoofficinalis* is commonly called the 'Indian gooseberry'. It is a small to medium-sized tree with a crooked trunk and spreading branches, and grayish-green bark that peels off in flakes.



Scientific Classification

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperm
Order	Malpighiales
Family	Phyllanthaceae
Sub family	Euphorbiaceae
Genus	Phyllanthus, Emblica
Species	Phyllanthusemblica

Description

Macroscopic Characters

Drug consists of curled pieces of epicarp and mesocarp of dried fruit occurring either whole or as separated single segment 1 to 2 cm long or united as 3 or 4 segments; bulk colour grey to black, pieces showing, a broad, highly shriveled and wrinkled, external surface convex to somewhat concave, transversely wrinkled showing a few whitish specks; occasionally some pieces may show a portion of stony endocarp; fracture, tough, cartilaginous, taste, sour and

astringent; seeds and endocarp must be within the limits prescribed for foreign matter (Ayurvedic Pharmacopoeia of India, Part I, Volume VIII, First edition 2011).

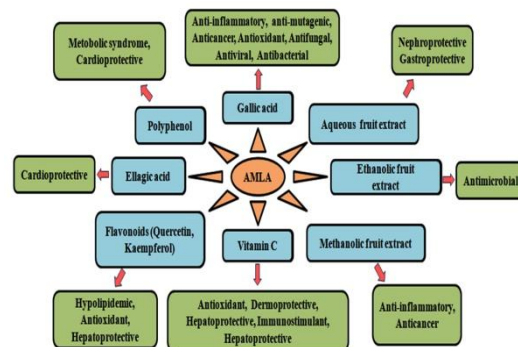
Microscopic Characters

Anatomical Structure

- 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.

Chemical Constituents

- **Leaves:** It contains gallic acid, chebulic acid, ellagic acid, chebulinic acid, chebulagic acid, amlic acid, alkaloids phyllantine and phyllantidine .
- **Seeds:** A fixed oil, phosphatides and a small quantity of essential oil. The fixed oil (acid value 12.7; saponification value 185; iodine value 139.5; acetyl value 2.03; unsaponifiable matter 3.81%; sterol 2.70% ; saturated fatty acid 7%. Contains linolenic acid (8.78%), linoleic (44%). oleic (28.40%), steric (2.15%), palmitic (2.99%) and miristic acid (0.95%).
- **Barks:** Contain leukodelphinidin, tannin and proanthocyanidin.
- **Roots:** Contain ellagic acid and lupeol.



Pharmacological Activity

1. **Antifungal Activity-** Antifungal property of *E. officinalis* was reported against *Aspergillus* . Fruit ethanol and acetone extracts showed moderate activity against *Fusarium* and *Candida albicans* where Griseofulvin was used as standard antibiotic .Plant meth-anolic extract of *E. officinalis* did not show antifungal activity against phytopathogenic fungi *Aspergillus niger*.^[1]
2. **Insecticidal Activity :-**Saponins which are important constituents of *E. officinalis* have insecticidal or cytotoxic properties to certain insects . Although saponins which had shown insecticidal activity was collected from natural sources other than *E. officinalis*. But as saponins are bioactive compounds found in *E. officinalis* too, it is obvious that *E. officinalis* might have insecticidal activity and further evaluation can be conducted to get more precise evaluation.^[2]
3. **Radioprotective Activity:-**It has been reported that mice treated with *Emblica officinalis* extract before exposure to different doses of gamma radiation can reduce the severity of symptoms of radiation sickness and mortality. Similar delayed onset of mortality and reduction in the symptoms of radiation sickness in mice were seen in consecutively triphala treated mice before irradiation when compared with the non-drug treated irradiated controls.^[3]

4. **Antidepressant Activity :-**Antidepressant activity of aqueous extract of fruits of *E. officinalis* in inbred adult male Swiss Albino mice weighing 25-30g. The test was carried out by forced swim test (FST) and tail suspension test (TST). The result of this test showed the antidepressant activity of *E. officinalis* as comparable to the of standard antidepressant drug imipramine.^[4]
5. **Memory Enhancing Effects of EmblicaOfficinalis:-**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.^[5]
6. **EmblicaOfficinalis as Snake Venom Neutralizer:-**EO and Vitexnegundo were explored for the first time for antsnake venom activity. Najakaouthia and Viperarussellii venom was antagonized by the plant extracts significantly both in vivo and in vitro studies.russellii venom-induced coagulant, haemorrhagedefibrinogenating 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.^[6]
7. **Cardioprotective Activity of EmblicaOfficinalis:-**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]
8. **Hepato-Protective Activity :-** The histopathological study of liver cells of rats was examined by administering *E. officinalis* as a preventative agent to reduce paracetamol induced hepatotoxicity and it has been observed that fruit extract has the ability to rectify toxicity or hepatic damage . Another histological study was undertaken to demon-strate the protective effect of 50% hydroalcoholic extract of the fresh fruit of *E. officinalis* against chronic toxicity induced by carbon tetrachloride and thioacetamide in rats. From the liver sections of the tested rats, it was observed that *E. officinalis* reversed the abnormal histopathology by accelerating the regenerative activity and in a few cases, the hepatocytic injury was found negligible in *E. officinalis* treated group of rats.^[8]

II. CONCLUSION

Research in 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. Though *Emblicaofficinalis* 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. Further studies should be conducted to elucidate the molecular mechanism of interaction of various plant based drugs with human body in different diseases.

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