

## Physicochemical and Preliminary Phytochemical Analysis of *Embelica Officinalis* Gaertn

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### Abstract

In the present research work attempt has been made to determine physicochemical and photochemical analysis of *Embelica Officinalis* Gaertn. It is one of the important medicinal plant belonging to family Phyllanthaceae and found to possess gastro protective, antiemetic, antihypercholesterolemic, wound healing, nephroprotective, neuroprotective, antidiarrheal, antiatherosclerotic and Hepatoprotective activity. In the present research work powder of *Embelica Officinalis* Gaertn was evaluated for various physicochemical parameters. Physicochemical parameter such as moisture content, total ash, and water-soluble ash were evaluated. Extraction of phytochemicals was carried out by Soxhlet extraction method using hydro alcoholic solvent. The resulting extract was subjected for detection of alkaloids, Triterpene, flavonoids, tannins, carbohydrates as per standard procedures. The results of the physicochemical parameters were within the acceptance.

**Keywords:** *Embelica Officinalis* gaertn, physicochemical, phytochemical, total ash, alkaloids

### 1. Introduction

*Embelica Officinalis* Gaertn is the one of the important medicinal plant belonging to family Phyllanthaceae and found to possess gastro protective, antiemetic, antihypercholesterolemic, wound healing, nephroprotective, neuroprotective, antidiarrheal, antiatherosclerotic and Hepatoprotective activity<sup>[1]</sup>. *Embelica Officinalis* Gaertn is very nutritious and is main source of Vitamin C and many minerals, amino acids, protein, glutamic acid, proline, alanine, lysine, cystine, aspartic acid. Phytochemical investigation has revealed that it contain higher amount of flavonoids like quercetin<sup>[2]</sup>. Various formulations containing extract of *Embelica Officinalis* Gaertn are available in market. Quality control play an important role in the analysis of crude drugs and extracts. Fruits have many traditional and biological effects<sup>[3]</sup> Fresh fruits are found to show refrigerant, diuretic, and laxative, carminative and stomachic activities. Dried fruit is sour and astringent. Amla fruit paste is main ingredient of Chyawanprash, a popular Ayurvedic tonic<sup>[4]</sup>. Amla is known as Amritphale in Sanskrit, which literally means the fruit of heaven or nectar fruit and is the richest source of Vitamin C and hence it have great antioxidant activities<sup>[5, 11]</sup>. The picture of fruits is presented in Figure 1.



Fig 1: Fruits of *Embelica Officinalis* Gaertn

Hence in the present research work an attempt has been made to determine the physicochemical and phytochemical analysis of *Embelica Officinalis* Gaertn.

### 2. Material and Method

#### 2.1 Collection and Authentication of plant materials:

The raw material *E. Officinalis* fruit procured from KLE Ayurveda pharmacy and authenticated from SHRI B.M.K Ayurveda Mahavidyalaya, Belagavi. The authentication of sample was done and preserved in the B.M.K Ayurveda Mahavidyalaya and Research Centre facility Belagavi - 590010 for further reference.

#### 2.2 Preparation of plant powder

The fruits of *E. Officinalis* were crushed and then grinded in the blender. Later taking a sieve and powder were passed from sieve no. 80. All the powdered material was sterilized for the elimination of other foreign material to avoid damage to the active constituents. Later this small reduced powder was been stored in air tight container.

#### 2.3 Physicochemical analysis

The physicochemical parameters include extractive values, ash values, loss on drying were performed as per standard procedure for powders of the plant materials.<sup>3</sup>

#### 2.4 Extraction of phytochemicals

The extraction of phytoconstituents was done by Soxhlet Extraction using hydro alcoholic solvent. Obtained extract were concentrated and dried. It is then stored in well closed container and protect from light.

#### 2.5 Preliminary Phytochemical test

The dried extract of plant was subjected for phytochemical screening in order to identify the presence of primary and secondary metabolites. Test for presence of alkaloids, flavonoids, carbohydrates, proteins, Triterpenes were

performed as per standard procedure for extract of plant materials [4].

### 3. Result and Discussion

#### 3.1 Physicochemical analysis

Quantitative determination of various physical parameter of the powder is represented in table no1.

**Table 1:** Physicochemical analysis of *E. Officinalis*

Sr. No.	Physicochemical Tests	<i>E. Officinalis</i>
1.	Total Ash	3.0 ± 0.5
2.	Acid insoluble ash	0.52 ± 0.3
3.	Alcohol soluble extract	25 ± 3.5
4.	Water soluble ash	0.98 ± 0.4
5.	Water soluble extract	52 ± 2
6.	Loss on drying	8.11 ± 0.19

#### 3.2 Preliminary Phytochemical Screening

The Qualitative Phytochemical screening was done as per the standard procedure and data were presented in table no.2.

**Table 2:** Phytochemical Analysis of *E. Officinalis*

Sr. No.	Active Constituents	Name of the Test	<i>E. Officinalis</i>
1.	Alkaloids	a.) Dragendroff's Test b.) Mayers Test c.) Wagner Test.	+
2.	Carbohydrates	a.) Molisch's Test b.) Benedict's Test	+
3.	Flavonoids	a.) Shinoda Test	+
4.	Tannin	a.) Gelatin Test	+
5.	Protein	a.) Biurette Test	+
6.	Saponins	a.) Foam Test	+
7.	Triterpenes	a.) Morawaski	-

### 4. Conclusion

The present study concludes that *Emblca Officinalis* showed the presence of various secondary metabolites like alkaloids, flavonoids, tannin and carbohydrates. All the physicochemical parameters of powder were within the acceptance.

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### 6. Reference

- Petrovska BB. Historical review of medicinal plants' usage. *Phcog Rev*, 2012; 6:1-5.
- Bhandari P. *Emblca officinalis* (Amla) A review of Potential Therapeutic Activity. *International Journal of Green Pharmacy*, 2012; 6:257-69.
- AK Meena, Arjun Singh. Evaluation of physicochemical and preliminary phytochemical studies on the fruit of *Emblca Officinalis* Gaertn. *Asian Journal of Pharmaceutical and Clinical Research*, 2010, 3(3). ISSN - 0974-2441

- Sowmya MN, Nanjammanni N. An Phyto - Chemical Analysis of Seedless Amalaki Fruit (*Emblca Officinalis*) Churna *International Journal of Pharmaceutical Science Invention*. 2017; 6(3):09-12.
- Scartezzini P, Antognoni F, Raggi MA, Poli F, Sabbioni C. Vitamin C content and antioxidant activity of the fruit and of the Ayurvedic preparation of *Emblca officinalis* Gaertn. *J Ethnopharmacol*. 2006; 104(1-2):113-8.
- Jain PK, Das D, Pandey N, Jain P. Traditional Indian herb *Emblca officinalis* & its medicinal importance. *Innov J Ayurvedic Sci*. 2016; 4(4):1-15.
- Bharthakur NN, Arnold NP. Chemical analysis of the emblic (*Phyllanthus emblica* L) and its potential as a good source. *Sci Hortic*, 1991; 47:99-105.
- Habib-ur-Rehman, Yasin KA, Choudhary MA, Khaliq N, Atta-ur-Rahman, Choudhary MI, *et al*. Studies on the chemical constituents of *Phyllanthus emblica*. *Nat Prod Res*, 2007; 21:775-81.
- Jain PK, Singhai AK, Das D. Alternative herbal drugs used for treating hair disease. *Asian J Pharm Clin Res*. 2016; 9(1):75-7.
- Jain PK, Dass DJ. Evaluating hair growth potential of some traditional herbs. *Asian J Pharm Clin Res*. 2015; 8(6):150-2
- Patel SS, Goyal RK. *Emblca officinalis* gear: A comprehensive review on phytochemistry, pharmacology and ethnomedicinal uses. *Res J Med Plant*, 2012; 6:6-16.
- Ibrahim NA, Mansour YS, Sulieman AA. Antiemetic medications: Agents, current research, and future directions. *International Journal of Pharmacy and Pharmaceutical Sciences*. 2019:7-14.