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PHYTOCHEMICAL ANALYSIS OF METHANOLIC EXTRACT OF EMBLICA OFFICINALIS LEAVES

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ABSTRACT

The study was given for phytochemical investigation of methanolic extract of Emblica Officinalis leaves and to check the flavonoid, test for carbohydrate, and test for protein, sapponin, terpenoid, tannins, glycosides, alkaloid and resins. Checking of all these test can be done as per the procedure given in research article. to check which chemical are present in the plant of Emblica Officinalis leaves. This study revealed that to observe test and check present or absent. The objective of the present investing was to study. the photochemical investing as of ethanolic extract of leaves of Embalica Officinalis using invitro method such as test killer killant test for glycosides, flavonoid alkaloid, tannins resins, test for carbohydrate protein this preliminary study reveals that Embalica Officinalis extract (ethanolic) checking of phytochemical agent are present and absent in this plant. The aim of this research is to check the phytochemical agent determination by various methods. The fruit is used as a major constituent in several Ayurvedic preparations for promotion of health and longevity. It is known that Amla is a good source of polyphenols, flavones, tannins and other bioactive compounds.[3] These substances being strong antioxidants might contribute to the health effects of Amla.

KEYWORDS: Embalica Officinalis, Ethanolic extract, test for carbohydrate, test for protein, Resin, Alkaloid.

INTRODUCTION

Amla (Emblica officinalis L.) as a Euphorbiaceous plant is widely distributed in subtropical and tropical areas of China, India, Indonesia and Malaysia.[1] The fruit is used as a major constituent in several Ayurvedic preparations for promotion of health and longevity.[2] It is known that Amla is a good source of polyphenols, flavones, tannins and other bioactive compounds.[3] These substances being strong antioxidants might contribute to the health effects of Amla. Several active compounds like gallic acid, ellagic acid, 1-O-galloyl-D glucose, chebulininc acid, quercetin, chebulagic acid, kaempferol, mucic acid 1,4-lactone 3-O-gallate, isocorilagin, chebulanin, mallotusinin and acylated apigenin glucoside compounds have been isolated from the aqueous extract of Amla.[3,4,5,6] These bioactive components have anticancer, hypolipidemic, expectorant, purgative, spasmolytic, antibacterial, hypoglycaemic[7,8] hepatoprotective, hypolipidemic activities and also can attenuate dyslipdaemia.[9,10] Though the functional properties of Amla have been reported, the seed and seed coat of Amla have never been investigated for their functional properties as well as compositional analysis. In this chapter the physicochemical properties of different varieties of Amla are presented. Further, Amla seed and seed coat of Chakaiya variety (major processing waste of Amla based industries) were separately analyzed for their proximate composition, antioxidant properties, total phenolic contents, major/micronutrients and fatty acid profile.

MATERIALS AND METHOD

Collection of the plant samples

Fresh leaves of Embilika officinalis were collected from the Sahyadri College Of Pharmacy Campus Sangola, Dist. Solapur from Maharashtra.

Table 1: Amla fruit: Chemical constituent.

Type	Chemical Constituents
Hydrolysable Tannins	Emblicanin A and B, Punigluconin, Pedunculagin, Chebulinic acid (Ellagitannin), Chebulagic acid (Benzopyran tannin), Corilagin (Ellagitannin), Geraniin (Dehydroellagitannin), Ellagotannin
Alkaloids	Phyllantine, Phyllembein, Phyllantidine
Phenolic Compounds	Gallic acid, Methyl gallate, Ellagic acid, Trigallayl glucose
Amino acids	Glutamic acid, Proline, Aspartic acid, Alanine, Cystine, Lysine
Carbohydrates	Pectin
Vitamins	Ascorbic acid
Flavonoids	Quercetin, Kaempferol

Preparation of the Plant Extract[11]

The freshly collected leaves were thoroughly washed thrice in distilled water, shade dried, powdered using a mechanical blender and subjected to extraction using solvents such as methanol, ethanol, ethyl acetate and chloroform separately using Soxhlet apparatus.

Test for Carbohydrates[12]

Molisch Test: To 2 ml extract few drops of α-naphtha (20% in ethyl alcohol) were added. Then 1 ml of conc. H_2SO_4 was added along the side of the test tube. Reddish violet ring at the junction of the two layers indicates the presence of carbohydrates.

Reduction of Fehling's Solution[12]

10 ml of Fehling solution (copper sulphate in alkaline condition) was added to the concentrated extracts and heated on a steam bath. Brick-red precipitate indicates the presence of carbohydrate.

Test for Proteins[12,13]

Biuret Test: To 3 ml of extract was added 4% NaOH and few drops of 1% $CuSO_4$ solution. Violet or pink colour indicates the presence of protein.

Test for Glycosides[13]

Keller-Killani Test: 1 ml of glacial acetic acid containing traces of $FeCl_3$ and 1 ml of concentrated H_2SO_4 were added to the extracts carefully. A reddish-brown colour is formed at the junction of two layers and the upper layer turns bluish green indicates the presence of glycosides.

Test for Tannins[14,15]

To 1 ml of extract, 2 ml of 5% $FeCl_3$ was added. A dark blue or green black colour indicates the presence of tannins.

Test for Alkaloids[14]

To 2 ml extract 2 ml Conc. HCl and few drops of Mayer's reagent was added. A green or white precipitate indicates the presence of alkaloids.

Test for Flavonoids[13,14]

To 2 ml extract 1 ml 2N NaOH was added. Appearance of yellow colour indicates the presence of flavonoids.

Test for Terpenoids[14,15]

To 2ml of each extract 5 ml of chloroform and few drops of concentrated H_2SO_4 were carefully added to form a layer. A reddish brown coloration formed in the interface indicates the presence of terpenoids.

Test for Saponins[15]

Foam test - The crude extract is mixed with 5 ml of distilled water and shaken vigorously. The formation of stable foam indicates the presence of saponins. Froth test – 2 g of the powdered sample is boiled with 10 ml of distilled water and then filtered and mixed with 5 ml of distilled water and added with few drops of olive oil and mixed vigorously, then observed for the formation of emulsion.

Test for Resins[14,15]

1 ml of the extracts was treated with few drops of acetic anhydride followed by concentrated H_2SO_4. Colour ranging from orange to yellow was noticed.

Phytochemical analysis of *Embilica Officininalis Leaves*

Phytochemical test	Ethanolic extract of embilica officinalis
Tannin	Present
Flavanoids	Absent
Alkaloid	Absent
Terpenoid	Absent
Glycoside	Absent
Saponins	Absent
Resin	Absent
Carbohydrate	Present
Protein	Absent

Morphology of plant

It is a small medium sized tree grown up to 8 to 18 meters in height, and having asymmetrical shape with spreading branches. The leaves are oval shaped and very short in size up to 7-10 cm long. Greenish yellow color flowers and fruits are appears. The fruits are shown fleshy with sour, astringent taste with spherical in shape and six vertical bands.

Figure 1: It Shows The Fruit, Flower, Bark, Powder, Leaves, Stem.

Figure 2: Fruit, Leaves & Bark.

Binomial Name :- Phyllanthus emblica, L.

Synonyms :- Amla

Cicca emblica (L.)Kurz

Diasperus emblica(L) kuntze

Dichelactina nodicaulis hance

Emblica arborea Raf

Emblica officinalis Gaertn

Phyllathus Glomertus Roxb. Ex wall. Nom. Inval

Phyallathus mairei H. Lev.

Phyllathus mimosifolius salisb. Phyallathus taxifolius D. Don

Scintific classification

Kingdom :- Plantae

Clade :- Angiosperms

Clade :- Eudicotes

Clade :- Rosids

Oreder:- Maipighiales

Family :- Phyllanthaceae

Genus :- Phyllanthus

Species :- P. emblica

Some More Uses of Amla Include

1. Treating impure blood and blood fever.

2. Balancing the imbalance defective energies.

3. Treating frequent urination.

4. Improving immunity.

5. Treating of ulcers and hyperacidity.

6. Treating skin diseases.

7. Accelerating the wound healing process.

8. Reducing the risk of cancers.

9. Protecting from bacterial, viral and fungal infections.

10. Improving liver function.

11. Providing nourishment to the nerves and improving paralytic conditions.

12. Working as brain tonic and to increase alertness and memory.

13. Lowering cholesterol and blood sugar level.

14. Lowering the risk of cold, cough and other infections of respiratory tract.

DISCUSSION

The Phytochemical Investigation Of Ethanolic Extract Of Embilica Officinalis Shows The carbohydrate, tannins, other constituents like glycoside, flavonoid, terpenoid, saponins & resins are absent. Further study revlead that types of carbohydrates & types of tannins are studied.

Different varieties of amla shows significant changes in the composition of different varities of amla were observed.

RESULT

The phytochemical investigation of ethanolic extracts of embilica officinalis shows carbohydrate & tannins are present.

CONCLUSION

The Present Study Revealed That the Presence of Carbohydrate & Tannins further studies indicates the types of various carbohydrate & types of various tannins.

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