

PRELIMINARY PHYTOCHEMICAL SCREENING OF ECLIPTA PROSTRATA

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ABSTRACT

India is a land of medicinal plants and is rich in bioactive constituents. Innumerable bioactive phytoconstituents were identified and used for the acute and chronic ailment. Finding the right choice of medicinal bioactive components constitutes healing of various diseases with downscale time. It regulates normal health by maintaining tissue architecture and leaving it unaltered. Eclipta prostrata is an herb used in Indian traditional medicine for improving the disease with respect to skin and appendages. The present study involves the phytochemical screening and analysis of Eclipta prostrata. Absolute ethanol was used as a solvent to extract the plant crude metabolites. The phytochemical screening of the plant crude extract showed the presence of flavanoid, Terpenoids and tannins, and absence of alkaloids, cardiac glycosides, and saponins with percent yield of 5% in a methanolic solvent. Phenol readings of 978 µg Gallic acid equivalent /2 mg dry extract.

KEYWORDS: Eclipta Prostrata, Soxhlet Apparatus, Phytochemical Screening, Phytochemical Analysis, Gallic Acid Equivalent.

INTRODUCTION

Skin and hair cosmetics hold a promising position among people of global fashion and healthcare industry. Many cosmetic and therapeutic products are launched every year. It has innumerable herbal and bioactive combinations to keep the skin and appendages alive. On the other hand, it may lead to chemical toxicity resulting in allergic skin responses and hair fall. The study focuses on eclipta prostrata a plant commonly known as false daisy and bhringraj. They belong to sunflower family with cylindrical, grayish roots. The solitary flower heads are 6–8 mm in diameter, with white florets. The achenes are compressed and narrowly winged. It grows widely in moist places of India, Nepal, China, Thailand and Brazil. The leaves and roots of eclipta prostrata used for medicinal purposes like hair growth and wound healing.

MATERIALS AND METHODS

Extraction of Plant Crude Metabolites

A 100 gram of shade-dried *Eclipta prostrata* leaves were powdered using pulverizer. The about 100-gram powdered sample was made as a thimble and placed in 500 ml extractor of soxhlet apparatus. Around 1.5 L of absolute ethanol was used as a solvent to extract the plant crude metabolites. Altogether sixteen, reflux was made and the extracted solvent dissolved crude obtained. Thus obtained crude metabolites were condensed using rotary evaporator (Buchi, Switzerland). The condensed crude plant metabolites used for further studies.

Phytochemical Screening

Phytochemical tests were carried out using methanolic extract such as follows:

Test for Glycosides -Liebermann's test

2 ml of the sample was dissolved in 2 ml of chloroform and then 2 ml of acetic acid was added to it. The solution was cooled well in ice. Sulphuric acid was then added carefully. A color change from violet to blue to green indicates the presence of a steroidal nucleus (that is, a glycone portion of glycoside).

Test for Steroids

A red color produced in the lower chloroform layer when 2 ml of organic extract was dissolved in 2 ml of chloroform and 2 ml concentrated sulphuric acid was added to it,

indicates the presence of steroids. Development of a greenish color, when 2 ml of the organic extract was dissolved in 2 ml of chloroform and treated with sulphuric and acetic acid indicates the presence of steroids.

Test for Tannins

About 2 ml of the sample was stirred with 2 ml of distilled water and few drops of FeCl₃ Solution were added. Formation of green precipitate was an indication of the presence of tannins.

Total phenol estimation

The mixture was prepared by to dissolve 100 mg of sample in 1 ml of methanol. From the mixture 20 µl was taken and 180 µl of water is added. Then 0.5ml of folin phenol reagent, 0.5ml of water 1 ml of 7.5% sodium carbonate was added to the mixture. Then it is kept 2 hours for incubation. And the absorbance was read at 726 nm by a spectrophotometer. Gallic acid was used as phenol standard and expressed as Gallic acid equivalent.

PHYTOCHEMICAL ANALYSIS

The phytochemical analysis of each sample was performed for alkaloids, tannins, saponins, flavenoids, and terpenoids.

Test for alkaloids

A small amount of solvent-free extract was dissolved in dil. HCl. 1.2 ml of this extract was mixed with 0.1 ml of Mayer's reagent. Formation of white precipitate shows the presence of alkaloids.^[1]

Mayer's reagent

0.13 g of mercuric chloride and 0.5 g of potassium iodide was dissolved in 10 ml of distilled water.

Test for tannins

A small amount of extract was dissolved in 2 ml of distilled water and it is mixed with few drops of 1% ferric chloride (0.1 g in 10 ml). Formation of green precipitate on the top layer shows the presence of tannins.^[1]

Test for saponins

A pinch of the extract was dissolved in 1 ml of distilled water. It was warmed in the heating mantle for 2 mins at 60°C. Then 0.5 ml of distilled water was added to it and shaken well. The appearance of froth on the top layer shows the presence of saponins.^[2]

Test for flavonoids

A pinch of the extract was dissolved in 5 ml of distilled water. 10% of sodium hydroxide was prepared (10 g in 100 ml water) and mixed with the extract. Formation of yellow color which disappears by the addition of dil. HCl shows the presence of flavonoids.^[1]

Test for Terpenoids

A small amount of extract was dissolved in 1 ml of chloroform and 1 ml of con. sulphuric acid. Formation of reddish-brown coloration confirms the presence of Terpenoids.^[2]

Table 1: Preliminary phytochemical analysis of eclipta prostrata.

Phytochemical Constituents	Ethanol
Alkaloids	-
Tannins	+
Saponin	-
Flavanoids (Alkali Tests)	+
Terpenoid	+
Cardiac glycosides	-

+ = PRESENT, - = ABSENT.

RESULT AND DISCUSSION

The characteristic color of powdered plant material of eclipta prostrata was green under normal light.

Around 4.8 g of crude solvent extract was obtained from 100 gram dried leaves. Nearly 5% of crude extract yield was obtained from the medicinal plant that used in this study.

The phytochemical screening of the plant crude extract showed the presence of flavanoid, Terpenoids and tannins, and absence of alkaloids, cardiac glycosides, and saponins in a methanolic solvent. Phenol readings of 978 µg Gallic acid equivalent /2 mg dry extract.

The phytochemical screening of the plant crude methanolic extract showed the presence of flavanoid, Terpenoids and tannins and absence of alkaloids, cardiac glycosides, and saponins.

Phytochemical screening of aqueous extract of *eclipta prostrata* shows the presence of alkaloids, steroids, flavonoids, terpenoids, phenol, and absence of tannins.^[3]

Phytochemical screening of *eclipta prostrata* in methanolic and aqueous extract showed the presence of flavanoid, Terpenoids, tannins, alkaloids, steroids, phenol, and tannins.^[4]

Tannin is present in methanolic extract whereas it is absent in aqueous extract of *eclipta prostrate*.

Tannins present in *eclipta prostrata* have the property of coagulate proteins and mucosal tissues, thereby creating an insulation and protective layer that soothes irritation and pain in the skin.^[5]

The solid state of *Eclipta prostrate* is dissolvable in water and coconut oil. This dissolvable nature of biologically active phytoconstituents can be completely utilized in improving the ailments of skin and appendages when applied topically.

Phytochemical analysis of *Eclipta prostrata* has quite a number of biologically active phytoconstituents which may be responsible for many pharmacological actions of the herbs.

CONCLUSION

Eclipta prostrate is the herb analyzed in this present study for phytochemical constituents and reported. The biologically active phytoconstituents has to be further analyzed and isolated to find out the responsible active compounds that enhance hair growth and wound healing to treat burns & radiation injuries, which is under process.

Flavanoid,	Anti-allergic, anti-inflammatory, anti-oxidants, anti-microbial, Anti-fungal, anti-viral, anti-cancer, anti-diarrheal activity. Modifies mechanism of aging.
Terpenoids	<ul style="list-style-type: none"> • Starting material for synthesis of vitamin A. • Healthy skin cells production. • Retinal, retinol and retinoic acid are important to cell production and growth. Vitamin A stimulates fibroblast keeps skin firm & healthy in deep layers of skin.
Tannins	Antioxidants – skin tissue repair

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