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ORIGINAL RESEARCH ARTICLE

Preliminary Photochemical Screening on the Leaf Extract of *Eupatorium triplinerve* Vahl

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ABSTRACT

Present study of photochemical analysis on the leaf extract, n- hexane, ethyl acetate, n-buthanol, chloroform, petroleum ether, methanol, water leaf extract of *Eupatorium triplinerve* Vahl. Traditional of antiseptic, antineoplastic, antitussive, anti ulcerous, astringent, cardio tonic, cicatrizant, depurative, diaphoretic, emollient, hemostat, hepatoprotector, laxative, stimulant, tonic, sudorific, vulnerary. The methanol extract of the leaves should antimelanogenesis activity in a melanin bio synthesis assay. The crude extracts should good activity against the organism tested lerein. The photochemical constituent of ayapana as well as extrapolating its ethanopharmacological property. The photochemical screening in using crude powder and fractions of ayapana extract. In crude powder of ayapana leaves of Alkaloid, Flavonoids, Saponin, Tannin, Quinon, Steroid, Triterpenoid, Coumarin, Volatile Oil, Carbohydrate, Protein, Amino acid, Glycosides and Phenolic compound.

Key words: *Eupatorium triplinerve* Vahl, Solvent, Ethanomedicines, Extracts and phytochemistry.

1. INTRODUCTION

In recent years the uses of plant in management and treatment of diseases has gained considerable important. The leaves, stem, root, and are considered as one of the main source of biological active compounds. An estimate of the World Health Organization (WHO) states that around 85-90% of the world population consume traditional herbal medicine [1]. According to the World Health Organization database in 2003, there were ten million new cancer cases, with an annual increase of 20% every year. Based on this data and statistical calculation, it is estimated that in 2020, the new cancer cases may rise to as high as 20 million per year and around 84 million people could die if there were no comprehensive steps taken to address the problems [2].

Empirical consumption of this plant extract however was based on remedial belief which passed on from one generation to the next without clear guidelines or dosage intake. This could be fatal to one's health as these natural ingredients may contain chemical substances that are highly toxic even in a minute amount. This made standardization of traditional medicine as phytopharmacology product difficult. Remembering the diverse medicinal activity of *Eupatorium triplinerve* leaves, scientist were encouraged to conduct studies on this plant extract to search for strong scientific evidence which could be useful as template for discovery of new anti cancer and ultimately *Eupatorium triplinerve* Leaves can be used as alternative medicine in cancer treatment [3].

The Indian subcontinent is rich in medicinal plants and is one of the richest countries in terms of genetic diversity of medicinal plants. It exhibits a wide range in topography and climate. Moreover the agro climatic conditions are conducive for introducing and domesticating new exotic plant varieties [4]. Several plants have been used in folklore medicine. The rational design of novel drugs from traditional medicine offers new prospects in modern healthcare. Medicinal plants are of great importance to the health of individual and communities. The medicinal value of these plants lies in some chemical active substances that produce a definite physiological action on human body.

The most important of these chemically active constituents of plants are alkaloids, tannin, Flavonoids and Phenolic compounds. Many of

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these indigenous medicinal plants are also used for medicinal purposes [5,6].

Natural products, which come out from medicinal plants are important for pharmaceutical research and for drug development as a sources of therapeutic agents. At presents the demand for herbal or medicinal plant products has increased significantly. In the recent past, there has been growing interest in exploiting the biological activities of different ayurvedic medicinal herbs, owing to their natural origin, cost effectiveness and lesser side effects [7].

Medicinal plants are expensive gift from nature to human. The approval of traditional medicine as an alternative form of health care and the improvement of microbial resistance to the existing antibiotics has lead researchers to scrutinize the antimicrobial compounds [8]. Herbal medicines are safer than synthetic medicines because the phytochemicals in the plant extract target the biochemical pathway. Medicinal plants have been used all over the world for the treatment and prevention of various ailments, particularly in developing countries where infectious diseases are endemic and modern health facilities and services are inadequate [9].

Eupatorium triplinerve Vahl. Commonly called Ayapana (Synonym- *Ayapana triplinerve* and *Eupatorium ayapana*) is an ornamental erect perennial herb having aromatic leaves belongs to the family Asteraceae. It is a slender herb with narrow lance late leaves and large number of pedicelled flower head at the top of the branch. The methanolic extract of *Eupatorium triplinerve* is antioxidant effects against carbon tetrachloride induced hapatoxicity in rats [10]. While the ethanolic extract had analgesic effects in inflammatory model of pain [11].

2. MATERIALS AND METHODS

2.1: Plant material

The fresh leaves of the plant *Eupatorium triplinerve* Vahl were collected from State Forest Research Institute, Vandalore, Kanchipuram District, and TamilNadu. It was identified and authenticated in P.G Department of Plant Biology & Plant Biotechnology, Presidency College, Chennai, and TamilNadu.

2.2: Photochemical Test:

Alkaloid, Flavonoids, Saponin, Tannin, Quinon, Steroid, Triterpenoid, Coumarin, Volatile Oil, Carbohydrate, Protein, Amino acid, Glycosides, phenolic compound.

2.3: Preparation of Plant Extract:

The leaves of *Eupatorium triplinerve* vahl was washed under running tap water. It was then dried under shade and ground into coarse powder in the electronic grinder. Fifteen grams of powder was then different solvent extracts by using soxhlet method. The solvent was removed by evaporation at room temperature. The extracts were kept in freezer until further use.

2.4: Phytochemical Screening:

The different chemical tests were performed for establishing profile of the extract for its chemical composition, the following chemical tests for various phytoconstituents in the powder,(n-hexane), ethyl acetate, (n- buthanol), chloroform, petroleum ether, methanol and acetone.

(1) Test for alkaloids:

i) Dragendroff's Test: In a test tube containing 1ml of extract, few drops of dragendroff's reagent was added and the color developed was noticed. Appearance of orange color indicates the presence of alkaloids.

ii) **Wagner's Test**: To the extract, 2ml of Wagner's reagent was added; the formation of a reddish brown precipitate indicates the presence of alkaloids.

ii) **Mayer's Test**: To the extract, 2ml of Mayer's reagent was added, a dull white precipitate revealed the presence of alkaloids.

iv) **Hsager's Test**: To the extract, 3 ml of Hager's reagent was added; the formation of a yellow precipitate confirmed the presence of alkaloids.

(2) Test for tri-terpenoids:

i) **Salkowski test**: To 1ml of extract, tin (one bit) and vinyl chloride were added. Appearance of pink color indicates the presence of tri-terpenoids.

ii) **Horizon reaction**: When a substance was heated with a trichloro acetic acid, red to purple color was observed.

(3) Test for coumarins:

To 1 ml of extract, 1ml of 10% sodium hydroxide was added. The presence of coumarins is indicated by the formation of yellow color.

(4) Test for steroids:

i) **Liebermann Burchard** Test: To 1ml of extract, 1ml of glacial acetic acid and 1ml of acetic anhydride and two drops of concentrated sulphuric acid were added. The solution becomes

red, then blue and finally bluish green, indicates the presence of steroids.

(5) Test for tannins:
i) To the extract, ferric chloride was added, formation of a dark blue or greenish black color showed the presence of tannins.

(6) Test for saponins:
To 1 ml of the extract, 5 ml of water was added and the tube was shaken vigorously. Copious lather formation indicates the presence of Saponins.

(7) Test for flavones:

i) Shinoda Test: To the extract, a few magnesium turnings and 1-2 drops of conc. HCl Were added; formation of red color shows the presence of flavors.

(8) Test for Quinones:
To 1 ml of the extract, 1 ml of concentrated sulfuric acid was added. Formation of red color shows the presence of Quinones.

(**9) Test for flavanones**:
i) To the substance, 10% sodium hydroxide was added; yellow to orange color shows the presence of flavanones.
ii) To the substance can. Sulfuric acid was added, orange to crimson red color confirms the presence of flavanones.

(10) Test for proteins:

i**) Biuret Test:** To the extract, 1ml of 40% sodium hydroxide solution and two drops of one percent copper sulfate solution were added. Formation of violet color indicates the presence of proteins.

ii) **Xanthoprotein Test**: To the extract, 1ml of concentrated nitric acid was added. As a white precipitate was formed, it is boiled and cooled. Then, 20% of sodium hydroxide or ammonia was added. Orange color indicates the presence of aromatic amino acids.

iii) **Tannic Acid Test**: To the extract, 10% tannic acid was added. Formation of white precipitate indicates the presence of proteins.

(11)Test for carbohydrates:

i**) Molisch's Test**: To the extract, 1ml of alpha-naphthol solution, and concentrated sulfuric acid through the sides of test tube were added. Purple or reddish violet color at the junction of the two liquids revealed the presence of carbohydrates.

ii**) Fehling's Test**: To the extract, equal quantities of Fehling's solution A and B were added and on heating, formation of a brick red precipitate indicates the presence of carbohydrates.

iii**) Benedict's Test**: To 5ml of Benedict's reagent, the extract was added and boiled for two minutes and cooled. Formation of a red precipitate showed the presence of carbohydrates.

Test for amino acids:
Ninhydrin test: About 2 drops of Ninhydrin solution were added to the substance, a characteristic purple color indicates the presence of amino acids.

3. RESULTS AND DISCUSSION

(**Table 1 & 2**), shows the result of photochemical screening of *Eupatorium triplinerve* Vahl. Preliminary photochemical investigation of the different solvent extracts of the leaf of the plant *Eupatorium triplinerve* Vahl. The different extract of Powder, n- hexane, Ethyl Acetate, n- Buthanol, chloroform, Petroleum ether, Methanol, Acetone and water extracts. The present of Flavonoids, Saponin, Tannin, Steroid, Ttriterpenoid, Coumarin, Volatile Oil, Carbohydrates, Protein and Amino acid. The different solvent extracts absent of alkaloid. The alkaloid present in the chloroform extracts. The n-hexane extract absent of Flavonoids, Saponin Tannin, Quinon and Coumarin.

Table 1: Phytochemical screening of the leaf extracts (*Eupatorium triplinerve* Vahl)

S. No	Chemical Content	Powder	n-Hexane Extract	Ethyl Acetate Extract	n-Buthanol Extract	Water Extract
1	Alkaloid	-	-	-	-	-
2	Flavonoids	+	-	+	+	-
3	Saponin	+	-	-	+	+
4	Tannin	+	-	-	+	+
5	Quinon	-	-	-	-	-
6	Steroid	+	+	-	-	-
7	Triterpenoid	Steroid	Steroid	-	-	-
8	Coumarin	+	-	+	-	-
9	Volatile Oil	+	+	-	-	-

+ positive Reaction; - Negative Reaction

Table 2: Phytochemical screening of the leaf extracts (*Eupatorium triplinerve* Vahl)

S. No	Chemical content	Petroleum Ether Extract	Chloroform Extract	Acetone Extract	Methanol Extract
1	Alkaloids	-	+	-	-

2	Flavonoids	+	-	+	+
3	Saponin	+	+	+	-
4	Tannin	+	-	+	+
5	Quinines	-	-	-	+
6	Steroid	+	+	+	+
7	Coumarin	+	+	+	+
8	Volatile Oil	-	+	-	-
9	Carbohydrates	+	+	-	+
10	Protein / Amino Acid	-	+	+	+

+ positive Reaction; - Negative Reaction

Ethyl Acetate extracts of Saponin, Tannin, Quinon, Steroid, Triterpenoid and Volatile oil, n-Buthanol extract of Quinon, Steroid, Coumarin and Volatile oil. Water extract of Flavonoids, Quinon, Steroid, Coumarin and Volatile oil. Chloroform extract of Flavonoids, Tannin, and Quinon. Methanol extract of Saponin, Tannin, Volatile oil. Acetone extract of Quinon, Carbohydrates. The present study deal with qualitative analysis of leaf extract of *Eupatorium triplinerve* Vahl, on the basic data research easily isolated particular metabolite from the leaf extract quantifitatively

4. CONCLUSION

The results of the present study show that *Eupatorium triplinerve* Vahl is rich in photochemical. The photochemical screening can serve as the basic for preparation of herbal monograph for proper identification and authentication of drug.

REFERENCE

1. The Wealth of India Raw Materials, A Dictionary of Indian Raw Material & Industrial Products. 2002. Vo: l R-T, New Delhi, Publication & Information Directorate CSIR, 109-111.
2. Anonim, 2009a, http://www.raintree.Com/ ayapana. Accessed on October 28, 2009.
3. Anonim, 2009b, http://www.oxycjdw.com. Accessed on November 13, 2009.
4. Mitchell RN, Cotran RS. 2000. In: Robinsons Basic Pathology. 7th Ed, Harcourt Pvt. Ltd, New Delhi, India, 33-42.
5. Aiyelaagbe OO, Osamudiamen MP, 2009. Phytochemical screening for active compounds in Mangifera indicaleaves from Ibadan, Oya State. Plant Sci Res 2(1):11-13.
6. Edeoga HO, Okwu DE, Mbaebie BO., 2005. Phytochemical constituents of some Nigerian medicinal Plants. African Journal of Biotechnology. 4 (7):685-688.
7. Naik GH, Priyadarsini KI, Satav JG, Banavalikar MM, Sohani DP, Biyani MK., Comparative antioxidant activity of individual herbal components used in Ayurvedic medicine. Phytochemistry. 63 (2003) 97-104.
8. Sumathi, Parvathi., 2010. Antimicrobial activity of some traditional medicinal plants. J Med Plant Res 4:316-321.
9. Zaidan MRS, Rain NA, Badrul AR. 2005. In vitro screening of five local medicinal plants for antibacterial activity using disc diffusion method. Trop Biomed 22:165-170.
10. Bose, P., Gupta, M., Mazumder, K, U., Kumar, Raman than, S., Thangavel, R, S., Kumar, S., 2007. Hepatoprotective and Antioxidant Effects of Eupatorium ayapana against Carbon Tetrachloride induced Hepatotoxicity in Rats. Iranian Journal off Pharmacy and Therapeutics. 6 (1), 27-33.
11. Bose, PK, Sarkar, B.B., 1937. Haemostatic action of ayapin and ayapanin. Nature. 139(3516), 515-517.