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Research Article

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Qualitative phytochemical analysis of chloroform extracts of Sivanar Vembu (*Indigofera aspalathoides*)

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ABSTRACT

Medicinal plants have been a major source of therapeutic agents since ancient times to cure human diseases. India is considered as 'Botanical Garden Of The World' and more than 2200 species of medicinal and aromatic plantshave been identified after screening studies. Medicinal plantshave provided a source of inspiration for novel drug components, as plant derived medicines have made large contributions to human health and wellbeing. Sivanar Vembu (Indigofera aspalthoides) is a herbaceous plant belonging to the family Fabaceae. Traditionally the whole plant is used to treat various diseases like Leprosy, Cancer, Edema, Abscess, and Skin disorders. This Present study deals with the qualitative phytochemical analysis of Chloroform extract of Sivanar Vembu. The result are presented anddiscussed in this communication.

Key words: Sivanar vembu, Chloroform, Phytochemical, *Indigofera aspalthoides*.

INTRODUCTION

Medicinal plants are part and parcel of human society to combat disease from the dawn of civilization.In developing countries like India, different plants species are explored by ethnic societies exploiting them for treatment of various disease and disorders of the human being. According to the World Health Organization (WHO), medicinal plants would be the source to obtain variety of drugs. About 80 % of individuals from developed countriesuse traditional medicines, which has compounds derived from medicinal plants. However, such plants should be investigated to have a better understanding of their medicinal properties, safety, and efficiency [1].

Sivanar Vembu (*Indigofera aspalathoides) is*widely used in traditional medicines which has tremendous medicinal potential owing to its biological functions. In Siddha system of medicine certain plants are named after Gods name. The one among them is the Sivanar vembu which is named after Lord Siva. The Vembu, which is attributed to the Goddess,Shakthi. So this plant Sivnar Vembu has named after Siva & Shakthi. This plant has more miraculous powers to cure the ailments of people. [2]. It is a Siddha Kalpha drug in the Siddha system of medicine [3]. Indigofera is a large genus of about 700 species of flowering plants belonging to the family Fabaceae[4,5]. It is widely distributed in tropical and subtropicalregions[6]. It is commonly found in South India and Srilanka. The botanical name of the plant is *Indigofera aspalathoides*. The vernacular name of Indigofera aspalathoides is Sivanar Vembu, Iryvan Vembu, Punnakupudi, , Tavacimurunkai, Kaknacam, Putanaki, Putanayakiceti, Taciver, Tavaci, Tavacimurunkaiceti, Vankanttam, Mozhimurungai in Tamil[7], Pindi in Oriya,: Ratakohomba, Sivanimba in Snskrit, Manali in Malayalam, Redamandalam in Telungu, Shiva naaruballi, in Kannada[8].The leaves, flowers and tender shoots are cooling and demulcent [9]. The leaves are used for leprosy, cancerous affections [10], abscesses, dandruff and also for oedematoustumours [11]. The stem of Sivanar vembu is chewed to cure cough and decoction of leaves is used to cure chest pains, epilepsy, nervous disorders, asthma, bronchitis, fever and complaints of

stomach, liver [12], kidney and spleen [13,14]. The present study is aimed to analyse the phytochemical contents of Sivanar Vembu.

EXPERIMENTAL SECTION

Collection of Plant Material:
The plant sample was collected from the Inchikuzhiarea of Kalakkadu Mundanthurai Tiger Reserve Forest, Tirunelveli District, Tamil Nadu. The plant sample was washed thoroughly 2-3 times with running water and rinse with sterile distilled water for removal of dust and soil particle, air dried homogenised to a fine powder and stored in air tight containers.

Solvent Used:
The organic solvent chloroform was used to extract bioactive compounds.

Extraction of Bioactive Compound from Medicinal Plants:
Dried powder form of plant sample was used to extract bioactive principles. Five grams of sample (Plant) was weighed approximately and grounded in mortar and pestle by using approximately 2-3 ml of chloroform. The grounded material was made up to 50 ml using the same solvent and it was maintained in refrigerator for 24 hours. Then it was centrifuged at 5000 rpm for 20 minutes. The supernatant extract was used for the phytochemical analysis.

Phytochemical Screening:
The extract was subjected to the qualitative phytochemical screening for the presences of some chemical constituents. Phytochemical test were carried out by standard chemical procedure. Test were performed for Anthocyanin, Amino acids, Alkaloids, Coumarins, Cardial glycosides, Carbohydrate, Diterpenens, Emodins, Flavonoids, Fatty acids. Glycosides, Leucoanthocyannin, Proteins, Pholobatannins, Phenol, Phytosterol Steroids, Saponin, Tanin, and Triterpenes.

Test For;
Anthocyanin
Two ml of aqueous extract was added to 2 ml of 2N HCl and NH3, the appearance of pink turns blue violet indicates the Presence of Anthocyanin.

Amino acids:
Ninhydrin test
To the 2 ml extract 2 ml on ninhydrin reagent was added & boiled for few minutes, formation of blue colour indicatesthe presence of amino acid.

Alkaloids:
a) Mayer's Test: Filtrates were treated with Mayer's reagent (potassium Mercuric Iodide). Formation of a yellow colored precipitate indicates the presence of alkaloids.
b) Wagner's Test: Filtrates were treated with Wagner's reagent (Iodine in Potassium Iodide). Formation of Brown/reddish precipitate indicates the presence of alkaloids.
***c) Dragendroff's Test*:** Filtrates were treated with Dragendroff's reagent (solution of Potassium Bismuth Iodide). Formation of red precipitate indicates the presence of alkaloids.
d) Hager's Test: Filtrates were treated with Hager's reagent (saturated picric acid solution). Presence of alkaloids Confirmed by the formation of yellow coloured precipitate.

Coumarins
Three ml of 10% NaOH was added to 2 ml of aqueous extract formation of yellow colour indicates the presences of coumarins.

Cardial Glycosides:
Legal's Test: Extracts were treated with sodium nitropruside in pyridine and sodium hydroxide. Formation of pink to blood red colour indicates the presence of cardiac glycosides.

Carbohydrates:
Molisch's Test: Filtrates were treated with 2 drops of alcoholic alpha-naphthol solution in a test tube. Formation of violet ring at the junction indicates the presence of carbohydrates.

a) *Benedict's Test:* Filtrates were treated with Benedict's reagent and heated gently. Formation Orange red precipitateindicates the presence of reducing sugars.
b) *Fehling's Test:* Filtrates were hydrolyzed with dil.HCl, neutralized with alkali and heated with Fehling's A&B solutions. Formation of red precipitate indicates the presence of reducing sugars.

Diterpenes:
a)Copper acetate Test: Extracts were dissolved in water and treated with 3-4 drops copper acetate solution. Formation of emerald green colour indicates the presence of diterpenes.

Emodins
Two ml of NH4OH and 3 ml of benzene was added to extract appearance of red colour indicates presence of emodins.

Flavonoids:
a)*Alkaline Reagent Test:* Extracts were treated with few drops of sodium hydroxide solution. Formation of intense yellow colour, which becomes colourless on addition of dilute acid, indicates the presence of flavonoids.
b)*Lead acetate Test:* Extracts were treated with few drops of lead acetate solution. Formation of yellow precipitate indicates the presence of flavonoids.

Fatty Acid
Onegram of sudan III is mixed with 5ml of distilled water and the and mixed with 1ml of extract. The appearance of dark red oil droplet in the upper layer indicates the presence of fatty acids.

Glycosides
Modified Borntrager's Test: Extracts were treated with Ferric Chloride solution and immersed in boiling water for about 5 minutes. The mixture was cooled and extracted with equal volumes of benzene. The benzene layer was separated and treated with ammonia solution. Formation of rose-pink colour in the ammonical layer indicates the presence of anthranol glycosides.

Leucoanthocyanin
Five ml of Isoamyl alcohol added to 5 ml of aqueous extract, upper layer appear red in colour indicates the presence ofLeuanthocyanin.

Proteins:
Xanthoproteic test:
Extract was treated with few drops of concentrated HNO3 formation of yellow indicates the presence of proteins.

Phytosterols:
a)*Salkowski's Test:* Extracts were treated with chloroform and filtered. The filtrates were treated with few drops of conc.sulphuric acid, shaken and allowed to stand. Appearance of golden yellow colour indicates the presence of phytosterols.

Phenols:
Ferric Chloride Test: Extracts were treated with 3-4 drops of ferric chloride solution. Formation of bluish black colour indicates the presence of phenols.

Phlobatannins
Deposition of red precipitate when aqueous extract of each plant sample is boiled with 1% Aqueous HCl was taken as evidence for presence of Phlobatannins.

b)*Libermann Burchard's Test:* Extracts were treated with chloroform and filtered. The filtrates were treated with few drops of acetic anhydride, boiled and cooled. Conc. sulphuric acid was added. Formation of brown ring at the junction indicates the presence of phytosterols.

Steroid
One ml extract was dissolved in 10 ml of chloroform & equal volume of Conc. Sulphuric acid was added from the sideof the test tube. The upper layer turns red and Sulphuric acid layer showed yellow with green fluorescence. This indicates the presence of Steroid

Saponin
5 ml extract was mixed with 20 ml of distilled water then agitated in graduated cylinder for 15 min formation of foam indicates Saponin.

Tannin
Four ml extract was treated with 4 ml $FeCl_3$ formation of green colour indicates that presence of condensed tannin

Terpenoids
Two ml of the extract was mixed with 2ml of chloroform and 3ml Conc. Sulphuric acid was carefully added to form a layer. A reddish brown colouration of the interface was formed to indicate the presence of Terpenoids.

RESULTS AND DISCUSSION

The present study deals with the qualitative phytochemical analysis of chloroform plant extract of Sivanar Vembu (*indigofera asppalathoides*). The results are given in the Table-1. The result shows that the plant contains maximum of secondary metabolic substances like Anthocyanin, Aminoacids, Alkaloids, Coumarins, Carbohydrates, Cardialglycosides, Diterpenes, Flavanoids, Glycosides, Proteins, Phenols, Saponin, Tannin, Triterpenes.Out of 20 phytochemical compound analysed major 14 compounds are present. In the present study clearly indicates that the presence of many number ofphytochemicals are present. Because of the presence of large amount of bioactive chemical in the plant, it has the medicinalproperty to cure almost all common human ailments. So it conforms form this study that the plantSivanar Vembu can be used as a single drug to cure various diseases. More over theplantpossess the bioactive chemicals in the whole plant which is available throughout the year and also easyto collect. Further studies are needed to assess the nature of compound and it's curative effect on human diseases.

Table 1:Qualitative Phytochemical analysis of chloroform plant extract of Sivanar Vembu (*Indigofera aspalathoides*)

Sl.NO	Phytochemicals	Chloroform Extract
1	Anthocyanin	+
2	Amino acids	+
3	Alkaloids	+
4	Coumarins	+
5	Caridal glycosides	+
6	Carbohydrates	+
7	Diterpenes	+
8	Emodins	-
9	Flavanoids	+
10	Fatty acid	-
11	Glycosides	+
12	Leucoanthocyanin	-
13	Proteins	+
14	Phytosterol	-
15	Phenols	+
16	Phlobatanin	-
17	Steroids	-
18	Saponin	+
19	Tannin	+
20	Triterpenoids	+

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