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PRELIMINARY PHYTOCHEMICAL ANALYSIS OF JALAPIPPALI (Phyla Nodiflora (L.) Greene) WHOLE PLANT IN DIFFERENT SOLVENT EXTRACTS

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ABSTRACT

Jalapippali is one of the important medicinal herbs and extensively used now a days and botanically identified as *Phyla nodiflora* (Verbenaceae) which is distributed worldwide. It is used as a traditional medicine in many regions. Identifying the herbal drugs on the basis of marker compounds or biologically active compounds is one of the major challenges. It is known to have various biological activities such as Anti-microbial, Anti-tumour, Anti-inflammatory, Hepato protective and Antidiabetic effects. In the present study the plant has been completely reviewed for detection and isolation of Secondary metabolites, which signifies the medicinal plant as an efficient source of therapeutic agent. With an increasing acceptance of traditional medicine as an alternative form of health care, the screening of medicinal plants for active compounds is very important. For finding several compounds qualitative phytochemical analysis is very important. Five different solvents viz; Water, Ethanol, Methanol, Chloroform and Petroleum Ether were used to obtain extracts of the whole plant of *Phyla nodiflora.* These extracts were used for qualitative preliminary phytochemical analysis using standard chemical tests. More number of compounds have been isolated and the major components present are Alkaloids and Diterpenes. They have many important pharmacological effects, so can further be investigated for more biological activities which contribute towards its future prospects for its use in pharmaceutical industry and curing of various ailments.

Keywords: Antidiabetic, Hepatoprotective, *Phylanodiflora*, Phytochemicals.

INTRODUCTION

Traditional medicine based on plants has played a key role in the health care system of many countries like India, China, etc., About 60% of the total global population remains dependent on traditional medicines for their health care system.[1]It has been universally accepted that the Ayurvedic medicines are far safer than that of other synthetic medicines in

the management of complex diseases.*Phyla nodiflora*has been used in folk medicine for various ailments such as Asthma, Knee joint Pain, Gonorrhea, Piles, Cardiopathy, Hepatitis and Fever[2] . *Phyla nodiflora* (Verbenaceae) known as *Lippia nodiflora* is an evergreen, creeping branched herb, distributed in India, Srilanka, Ceylon, South and Central America and Tropical Africa. In literature review it was found that the aerial parts are used as Anodyne, Antibacterial, Diuretic, Parasiticide, Refrigerant and Febrifuge.[3]

Phyla nodiflora is a member of family Verbenaceae. The family includes 75 genera and about 2500 species and the genus Phyla includes 10 species. Synonyms of *Phyla nodiflora* are Lippia nodiflora, Lippia incise and Phyla incise. *Phyla nodiflora* is known by the local people as Jal pippali, Lippia, Frog fruit and Bukkhan.[4]

Phyla nodiflora is fast growing perennial prostate herb. Leaves; obovate, obtuse, somewhat fleshy and rarely sub acute.[5] Their surface is covered with fine hairs and colour is greyish green. Leaves are arising in pairs from the stem. Young stem is green to purple in colour and becomes grey and woody when mature. Thickness of young stem is 2-3 mm.[6]Flowers are white, rarely pinkish to purple in colour, 3mm long. Seeds were not visible to naked eye. Fruits; ovate,16mm long and release two brown colour mature seeds on maturity.

Figure1: *Jalapippali* (*Phyla Nodiflora* (L.) Greene) Whole Plant

Aims and Objectives:-

To analyze the phytochemical properties of the whole plant of *Phyla nodiflora* (L.) Greene)

Materials and Methods:

Collection of the plant material:

Phyla nodiflora was collected from the medicinal plant garden at Dr. B.R.K.R Govt Ayurvedic College, Erragadda, Hyderabad.

Preparation of the plant extract:

The whole plant of *Phyla nodiflora* were collected, shade dried at room temperature for 15 days. The plant material was crushed well into fine powder using an electronic grinder

and kept into air tight polythene bags and stored at room temperature.

Figure 2: *Jalapippali* Whole Plant Extract in Different Solvents

Chemicals: Methanol, Ethanol, Petroleum ether, Chloroform, HCL, Mayer's reagent (Potassium Mercuric Iodide), Benedicts' reagent, FeCl3, Benzene, Ammonia, H2SO4, FeCl3, Lead acetate, Ninhydrin reagent, Copper acetate solution.

Extractive values of *Phyla nodiflora* with different solvents is determined with the specific standard methods explained in Ayurvedic Pharmacopoeia of India.[7]

Solvent extract of sample:

The extracts of sample powder were prepared by soaking 5 gm of dried powder in 100 ml of each methanol, ethanol, petroleum ether, chloroform and water and shaken well. The solution left at room temperature for 72 hours and then filtered with the help of filter paper. The filtrate was taken and used for further phytochemical screening. Phytochemical screening was done by standard methods.[8]

Phytochemical screening:

1. **Detection of alkaloids:** Extracts were dissolved individually in dilute Hydrochloric acid and filtered.

Mayer' Test: Filtrates were treated with Mayer's reagent (Potassium Mercuric Iodide).Formation of a yellow coloured precipitate indicates the presence of alkaloids.

2. **Detection of carbohydrates:** Extracts were dissolved individually in 5 ml distilled water and filtered. The filtrates were used to test for the presence of carbohydrates.

Benedict' Test: Filtrates were treated with Benedict's reagent and heated gently. Orange red precipitate indicates the presence of reducing sugars.

3. **Detection of glycosides:** Extracts were hydrolysed with dil. HCl, and then subjected to test for 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.

4. **Detection of saponins:**

Foam Test: 0.5 gms of extract was shaken with 2ml of water. If foam produced persists

for ten minutes it indicates the presence of saponins.

5. Detection of phytosterols:

Salkowski's Test: Extracts were treated with chloroform and filtered. The filtrates were treated with few drops of con. Sulphuric acid, shaken and allowed to stand. Appearance of golden yellow colour indicates the presence of triterpenes.

6. Detection of 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.

7. Detection of tannins:

Ferric Chloride Test

Extracts were treated with 3-4 drops of ferric chloride solution. Formation of green colour indicates the presence of tannins.

8. Detection of flavonoids:

Lead acetate Test: Extracts were treated with few drops of lead acetate solution. Formation of yellow coloured precipitate indicates the presence of flavonoids.

9. Detection of aminoacids:

Ninhydrin Test: To the extract, 0.25% w/v ninhydrin reagent was added and boiled for fminutes. Formation of blue colour indicates the presence of aminoacids.

10. Detection of diterpenes:

Copper acetate Test: Extracts were dissolved in water and treated with 3-4 drops of copper acetate solution. Formation of emerald green colour indicates the presence of diterpenes.[9]

RESULTS:

Table 1: The Extract Values of *Phyla Nodiflora* in Different Solvents

Solvents	Extract values
Aqueous	13.6 %
Methanol	8.6 %
Ethanol	4.17 %
Chloroform	2.63 %
Ether	1.76 %

Table 2: Phytochemical Screening of Extracts of *Phyla Nodiflora*

Phytochemical Test	PET	CHL	MET	ETH	AQS
Alkaloids	+	+	+	+	+
Carbohydrates	-	-	-	-	+
Glycosides	-	-	-	-	-
Saponins	-	-	-	-	+
Phytosterols	-	-	-	+	+
Phenols	-	-	-	-	-
Tannins	-	+	+	+	-
Flavanoids	-	+	-	-	+
Aminoacids	-	-	-	-	-
Diterpenes	+	+	+	+	+

+ sign indicates presence and - sign indicates absence.

PET, CHL, MET, ETH and AQS indicate petroleum ether, chloroform, methanol, ethanol, and water respectively. The above table shows that Alkaloids and Diterpenes were present in Aqueous, Ethanol, Methanol, Ether and Chloroform extracts of *Jalapippali*. Saponins were present in aqueous extract. Phytosterols were present in Aqueous and Ether extracts. Tannins were present in Ether, Methanol and Chloroform extracts. Flavonoids were present in Aqueous and Chloroform extracts. Carbohydrates were found in aqueous extract.

DISCUSSION

The Aqueous extractive value of *Phyla nodiflora* is 13.6% .Methanol - 8.6%, Ethanol - 4.17%

Chloroform - 2.63%, Petroleum ether – 1.76%.

The preliminary phytochemical screening of the whole plant of *Phyla nodiflora* revealed the presence of different bioactive secondary metabolites which might be responsible for their medical attributes. The outcome of qualitative phytochemical analysis of the whole plant of *Phyla nodiflora* is presented in Table 2. The Petroleum ether extract of *Jalapippali* whole plant revealed the presence of Alkaloids and Diterpenes. The Chloroform extract of *Jalapippali* whole plant revealed the presence of Alkaloids, Tannins, Flavanoids, Diterpenes. The Methanol extract of *Jalapippali*whole plant revealed the presence of Alkalods, Tannins, Diterpenes. The Ethanol extract of *Jalapippali* whole plant revealed the presence of Alkaloids, Phytosterols, Tannins, Diterpenes. The Aqueous, extract of *Jalapippali* whole plant revealed the presence of Alkalods, Carbohydrates, Saponins, Phytosterols, Flavanoids, Diterpenes.

CONCLUSION:

Phytochemical screening of the whole plant extracts of *Phyla nodiflora* indicates the presence of Alkaloids, Diterpenes, Saponins, Phytosterols, Tannins, Flavonoids and Carbohydrates suggesting that it is an important source of bioactive compounds that may supply novel medicine. Phytochemical analysis of this plant may be useful in developing new specialized drugs with more efficiency.

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