

PRELIMINARY PHYTOCHEMICAL ANALYSIS OF WATTAKAKA VOLUBILIS (L.f.) STAPF LEAF IN DIFFERENT SOLVENT EXTRACTS

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ABSTRACT

The knowledge of *Dravyaguna* made the modern era people to be enthusiastic in knowing the different plants with medical properties. Phytochemicals are non-nutritive chemical compounds that occur naturally on plants and have diverse protective properties. *Wattakaka volubilis(L.f.) Stapf*, Family Asclepiadaceae is a very common plant in south India, having synonym of *Dregea volubilis (L.f.) Benth. Ex Hook. f.* The present study deals with the Preliminary Phytochemical Analysis of Wattakaka volubilis (L.f.) Stapf Leaf in different Solvent Extracts like Aqueous, Methanol, Ethanol, Petroleum ether, Chloroform. The analysis shows presence of Alkaloids, carbohydrates, Glycosides, Saponins, Phytosterols, Phenols, Tannins, Flavonoids, Amino acids, and Diterpenes.

Keywords: Asclepiadaceae, Phytochemical Analysis, *Dregea volubilis*, *Wattakaka volubilis*.

INTRODUCTION

There has been an increasing interest in the study of medicinal plants as natural products in medicinal field around the world[1]. The medicinal value of plants depends on bioactive phytochemical constituents which produce definite physiological action in the human body. Based on World Health Organization recommendations, plants are important for use in traditional medicine[2]. *Wattakaka volubilis*, belongs to family Asclepiadaceae. It is a tall woody climber 11 M high and 5 Cm in girth with densely lenticellate and pustular

branches. Leaves 6.5 – 14 by 4.5-11 cm broadly ovate or sub-orbicular, acuminate glabrous or more or less softly pubescent, reticulately veined and with a few small glands just above the petioles. Flowers are green or yellowish green in lateral drooping umbellate cymes.[3&4] *Wattakaka volubilis* is a medicinal plant, which is traditionally used for several diseases and human requirements. [5] The young leaves are eaten in curries and are used in the treatment of pyoderma and fevers in children. The roots are used as an emetic. The

alcoholic extract of the plant Wattakaka volubilis is widely used in India as a traditional medicine in the application for boils and abscesses.[6] It is also frequently used as a remedy for cough, fever, severe cold, rheumatic pain, diabetes, eye diseases, snake bite [7-8] etc. The alcoholic extract of the plant is reported to show activity on the central nervous system, as well as anticancer activity against sarcoma 180 in the mice. [9] The literature survey revealed that among the various saponins obtained from the stem and flower of W. volubilis, two compounds are active against Ehrlich's ascites carcinoma. [10-11]

The present study deals with the Preliminary Phytochemical Analysis of Wattakaka volubilis (L.f.) Stapf Leaf in Different Solvent Extracts.

AIMS AND OBJECTIVES:-

To analyse the Preliminary Phytochemicals of leaf of Wattakaka volubilis (L.f.) Stapf .

MATERIALS AND METHODS:

Plant Material: Leaves of the plant collected herbal garden at Dr. B.R.K.R. Govt. Ayurvedic Medical College, Hyderabad. The drug was accurately identified by Toxonomist, Department of Botany, Satavahana University, Karimnagar, Telangana. All the collected leaves

were washed, shade dried and powdered, stored in the air tight container.

Chemicals: Methanol, Ethanol, Petroleumether, Chloroform, HCL, Mayer's reagent (Potassium Mercuric Iodide), Benedict's reagent, FeCl₃, Benzene, Ammonia, H₂SO₄, FeCl₃, Lead acetate, Ninhydrin reagent, Copper acetate solution. Extractive values of Wattakaka volubilis leaf with different solvents is determined with the specific standard methods explained Ayurvedic Pharmacopoeia of India[12].

Preparation of plant extract and phytochemical screening: Collected leaf material washed under running tap water to eradicate dust and microbes. The leaf samples were then air dried under shade at room temperature for 15 days. The leaf material was crushed well into fine powder in an electronic grinder and kept into air tight polythene bags for further use and stored at room temperature.

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[13].

Leaf Powder with Extracts and their Analysis



DIFFERENT EXTRACTS OF LEAF POWDER PHYTO CHEMICAL ANALYSIS



Phytochemical screening:

1. Detection of alkaloids:

Extracts were dissolved individually in dilute Hydrochloric acid and filtered.

Mayer's 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 im-

mersed 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 amino acids:

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

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.

RESULTS:

Table 1: Organoleptic characters of *Wattakaka volubilis* (L.f.) Staph

S.No	Characteristics	Findings
1	Texture	Fine powder
2	Odour	Not distinct
3	Colour	Greenish
4	Taste	Tikta, Kashaya

Table 2: Physico-chemical constituents of *Wattakaka volubilis* (L.f.) Staph

S.No	Characteristics	Results
1	Total Ash	12%
2	Moisture content	8.23%
3	Acid Insoluble Ash	0.44%
4	Water soluble extract	28.32%
5	Alcohol soluble extract	7.5%

Table 3: Extract values of *Wattakaka volubilis* (L.f.) Staph in different solvents

S.No	Solvent	Extractive value
1.	Aqueous extract	28.32%
2.	Ethanoic Extract	7.5%
3.	Petroleum ether extract	3.4%
4.	Methanolic extract	14.4%
5.	Chloroform extract	6.8%

Table 4: Preliminary Phytochemical screening of *Wattakaka volubilis*(L.f) Staph

Chemical constituents	Aqueous extract	Ethanoic Extract	Petroleum ether extract	Methanolic Extract	Chloroform extract
Alkaloids	-	+	-	+	-

Carbohydrates	+	-	-	+	-
Glycosides	+	-	+	-	-
Saponins	+	-	-	+	-
Phytosterols	-	+	-	+	+
Phenols	+	-	-	+	-
Tannins	+	+	-	+	+
Flavonoids	+	-	+	-	-
Amino acids	-	+	-	+	-
Diterpenes	+	+	-	+	-

+ sign indicates presence and - sign indicates absence.

DISCUSSION

The analytical results of *Wattakaka volubilis*(L.f) *Stapf* leaf showed that the Moisture content is 8.23%, Total Ash is 12%, Acid Insoluble Ash is 0.44%, Water soluble extract is 28.32%, Alcohol soluble extract is 7.5%. The Extractive values of Wattakaka volubilis (L.f) *Stapf* in Aqueous extract is 28.32%, in Ethanolic extract is 7.5%, in Petroleum ether extract is 3.4%, in Methanolic extract is 14.4%, in Chloroform extract is 6.8% it was observed that more extractive value is seen in Aqueous. The Preliminary Phytochemicals present in Aqueous Extract of *Wattaka volubilis* (L.f.) *Stapf* leaf powder are Carbohydrates, Glycosides, Flavanoids, Phenols, Tannins, Saponins and Diterpenes. The Ethanolic extract shows presence of Alkaloids, Phytosterols, Tannins, Diterpenes, Aminoacids. The Petroleum ether extract shows the presence of Flavanoids, Glycosides. The methonolic extract shows Alkaloids, Carbohydrates, Saponins, Phytosterols, Phenols, Tannins, Diterpenes, Aminoacids. The Choloroform extract shows the presence of Phytosterols, Tannins.

CONCLUSION

The Preliminary Phytochemical Analysis shows presence of Alkaloids, carbohydrates, Glycosides, Saponins, Phytosterols, Phenols, Tannins, Flavonoids, Amino acids and Diter-

penes. Phytochemical analysis of this plant may be useful in developing new specialized drugs with more efficiency.

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