

## QUALITATIVE PHYTOCHEMICAL ANALYSIS OF CHLOROFORM EXTRACT OF LEAVES OF *ADHATODA* *VASICA* NEES

Ashvin Godghate<sup>1</sup> and Rajaram Sawant<sup>2,\*</sup>

<sup>1</sup>Department of Chemistry, Dr. Ghali College, Gadhinglaj, 416502 Dist. Kolhapur, (M.S.) India

<sup>2</sup>Department of Botany, Dr. Ghali College, Gadhinglaj, 416502 Dist. Kolhapur, (M.S.) India

\*E-mail: [rajaramssawant@yahoo.co.in](mailto:rajaramssawant@yahoo.co.in)

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### ABSTRACT

Present study deals with the qualitative analysis of Chloroform Extract of leaves of *Adhatoda vasica* Nees. In which we isolates 16 secondary metabolites qualitatively of the extract. The dried leaf is smoked as a Cigarette. The leaf juice is stated to cure diarrhoea, dysentery and glandular tumour and is given as emmenagogue. The powder is reported to be used as poultice on rheumatic joints as Counter-irritant on inflammatory Swelling, on fresh wounds, Urticaria and in Neuralgia. Decoctions of matured yellow leaves are used against Asthma and Bronchitis.

**Keywords:** *Adhatoda vasica* Nees and Phytochemistry of leaves.

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### INTRODUCTION

Man and animals depends on the plants for their very existence. Our environment is characterized by richly diversified plant life. Plant diversity is composed of more than 5,00,000 botanical species. Plants constitute a vital component of the biodiversity as they play a key role in maintaining earth's environmental equilibrium and ecosystem stability. Herbal medicine is known to be the oldest form of healing. It originated from ancient Greek as far back as 1600BC<sup>1</sup>. With Herbal Renaissance happening all over the globe, medicinal herbs are staging a phenomenal comeback. Ethnobotanical information from India estimates that more than 6000 higher plant species forming about 40 % of the higher plant diversity are used in its codified and folk healthcare traditions<sup>2</sup>.

Ganga Raju M.et.al (2011) has reported Antiepileptic activity in rats from the Alcoholic extract of *Adhatoda vasica* leaves<sup>3</sup>. The leaves extract of *Adhatoda vasica* reported Antibacterial, Antimicrobial and Antioxidant Activity<sup>4-6</sup>. In the present study we investigated 16 phytochemicals qualitatively from Chloroform Extract of leaves of *Adhatoda vasica* Nees.

### EXPERIMENTAL

All the chemicals and solvents were of Analytical grade from SD Fine Chemicals Pvt. Limited, Bombay.

#### Plant Material

The leaves of *Adhatoda vasica* Nees. Were collected from, Gadhinglaj Tahsil of Kolhapur district, Maharashtra during Feb 2013. It was authenticated by Prof. R.S.Sawant Department of Botany, Dr.Ghali College, Gadhinglaj, Kolhapur district, Maharashtra.

#### Preparation of Extract

The collected leaves of *Adhatoda vasica* Nees were washed and dried under shade. The coarse powder of the leaves (500 gm) was soaked in 500 ml of Chloroform and extracted in the cold for 3 days with occasional shaking. The solvent from the total extract was filtered and filtrate was dried under shade, it was used for phytochemical screening.

### Phytochemical analysis

The individual extract was subjected to the qualitative phytochemical screening for the presence of some chemical constituents. Phytochemical test were carried out adopting standards procedure<sup>7,8,9</sup>. Test were performed for Steroids, Tannin, Saponin, Anthocyanin, Coumarins, Emodins, Alkaloids, Proteins, Amino acids, Diterpenes, Phytosterol, Phenol, Phlobatannins, Leucoanthocyanin, Cardiac glycosides and Flavonoids.

Table-1: Phytochemical analysis of leaves of *Adhatoda Vasica* Nees

S.No.	Phytochemicals	Chloroform Extract [+ means Present; - means Absent]
1	Steroids	+
2	Tannin	
	Lead acetate	-
	Ferric chloride	-
3	Saponin	+
4	Anthocyanin	-
5	Coumarins	+
6	Emodins	-
7	Alkaloids	
	Wagner Test	+
	Hager Test	+
8	Proteins	-
	Xanthoproteic Test	
9	Amino acids	
	Ninhydrin Test	-
10	Diterpenes	+
11	Phytosterol	-
	Salkowski Test	
12	Phenols	+
13	Phlobatannin	+
14	Leucoanthocyanin	-
15	Cardiac Glycosides	-
	Kellar-Killiani Test	
16	Flavonoids	
	Alkaline reagent test	+
	NH <sub>4</sub> OH	+
	Mg turning test	+
	Zn Test	+

#### Steroid

1ml extract was dissolved in 10 ml of chloroform & equal volume of concentrated H<sub>2</sub>SO<sub>4</sub> acid was added from the side of test tube. The upper layer turns red and H<sub>2</sub>SO<sub>4</sub> layer showed yellow with green fluorescence. This indicates the presence of steroid.

#### Tannin

- 2ml extract was added to 1% lead acetate a yellowish precipitate indicates the presence of tannins.
- 4ml extract was treated with 4 ml FeCl<sub>3</sub> formation of green colour indicates that presence of condensed tannin

#### 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.

**Anthocyanin**

2 ml of aqueous extract is added to 2 ml of 2N HCl and  $\text{NH}_3$ , the appearance of pink red turns blue violet indicates presence of Anthocyanin.

**Coumarin**

3 ml of 10% NaOH was added to 2 ml of aqueous extract formation of yellow colour indicates coumarins.

**Emodins**

2 ml of  $\text{NH}_4\text{OH}$  and 3 ml of benzene was added to extract appearance of red colour indicates presence of emodins.

**Alkaloids**

A quantity (3 ml) of concentrated extract was taken into a test tube and 1 ml HCl was added the mixture was heated gently for 20 min cooled and filter, the filtrate was used for following test.

- i. Wagner test: Filtrate was treated with Wagner's reagent; formation of brown reddish precipitate indicates presence of alkaloids.
- ii. Hager's test: Filtrate was treated with Hager's reagent, presence of alkaloids confirmed by the yellow colored precipitate.

**Proteins: Xanthoproteic test**

Extract was treated with few drops of concentrated  $\text{HNO}_3$  formation of yellow indicates the presence of proteins.

**Amino acids: Ninhydrin test**

To the 2 ml extract 2 ml on ninhydrin reagent was added & boil for few minutes, formation of blue colour indicates the presence of amino acid.

**Diterpenes: Copper acetate test**

Extract were dissolved in water and treated with 10 drops of copper acetate solution, formation of emerald green colour indicates presence of diterpenes.

**Phytosterol: Salkowski's test**

Extract was treated with chloroform and filtered. The filtrate was treated with few drops of concentrated  $\text{H}_2\text{SO}_4$  and shakes, allow standing, appearance of golden red indicates the positive test.

**Phenol: Ferric Chloride test**

Test extract were treated with 4 drops of Alcoholic  $\text{FeCl}_3$  solution. Formation of bluish black colour indicate the presence of Phenol

**Phlobatannins**

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

**Leucoanthocyanin**

5 ml of isoamyl alcohol added to 5 ml of aqueous extract, upper layer appear red in colour indicates the presence of Leucoanthocyanin

**Cardial Glycosides: Keller-Killani Test**

Plant extract treated with 2 ml glacial acetic acid containing a drop of  $\text{FeCl}_3$ . A brown colour ring indicates the presence of positive test.

### Flavonoid

- i. Alkaline reagent test: Extract was treated with 10 % NaOH solution, formation of intense yellow colour indicates presence of Flavonoid.
- ii.  $\text{NH}_4\text{OH}$  test: 3 ml of extract were 10 %  $\text{NH}_4\text{OH}$  solution development of yellow fluorescence indicates positive test.
- iii. Mg turning test: Extract were treated with Mg turning and add conc.HCl to this solution add 5ml of 95 % ethanol, formation of crimson red colour indicates Flavonoid.
- iv. Zn test: 2 ml extract were treated with Zn dust and conc.HCl development of red colour indicates presence of Flavonoid.

## RESULTS AND DISCUSSION

Present study deals with qualitative analysis of leaves extract of *Adhatoda vasica* Nees. Table no. 1 shows the results of phytochemical analysis of leaves of *Adhatoda vasica* Nees. Chloroform extract of leaves of *Adhatoda vasica* Nees shows the presence of Steroid, Saponin, Coumarins, Alkaloids, Diterpenes, Phenol, Phlobatannin and Flavonoids whereas Tannin, Anthocyanin, Emodins, Proteins, Amino acids, Phytosterol, Leucoanthocyanin and Cardiac Glycosides were absent.

Tenguria R.K. et.al (2008) has recorded five phytochemicals from ethanolic extract such as Alkaloids, Flavonoids, Tannins, Cardiac glycosides and Saponin from the leaves of *Adhatoda zeylanica* Nees<sup>10</sup>. Sagar Vijayrao Kathale (2013) has reported Eight phytochemicals from ethanolic extract of Leaves of *Adhatoda zeylanica* Nees<sup>11</sup>.

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