

ISSN 2320-3862

JMPS 2014; 2(4): 29-31

© 2014 JMPS

Received: 21-05-2014

Accepted: 05-06-2014

Santosh Kumar Singh

Ph.D. Scholar, Pacific college of Pharmacy, Pacific University, P.B.-12 Pacific Hills, Airport Road, Pratap Nagar Extension, Debari, Udaipur-313024, Rajasthan, India.

Jay Ram Patel

Principal, RKDF College of Pharmacy, NH-12, Hoshangabad Road, Misrod, Bhopal- 462047, Madhya Pradesh, India.

Prashant Kumar Dubey

Assistant Professor, IES College of Pharmacy, Bhopal, Madhya Pradesh, India.

Arvind Dangi

Lecturer, Mittal Institute of Pharmacy, Opp. Bhopal Memorial Hospital and Research Centre, By Pass Road, Nabibagh, Bhopal-462038, Madhya Pradesh, India.

Correspondence:

Santosh Kumar Singh

Ph.D. Scholar, Pacific college of Pharmacy, Pacific University, P.B.-12 Pacific Hills, Airport Road, Pratap Nagar Extension, Debari, Udaipur-313024, Rajasthan, India.

Pharmacognostic study and phytochemical screening of leaf of *Adhatoda vasica* (Acanthaceae)

Santosh Kumar Singh, Jay Ram Patel, Prashant Kumar Dubey, Arvind Dangi

Abstract

Adhatoda vasica commonly known as vasaka or also known as Roosh near to rural place Papaura, District Rewa (M.P.) India. In the pharmacognostic study of vasaka (leaf) was carried out the some major pharmacognostic study includes macroscopy, microscopy, phytochemical screening, highest values were found with the extraction of water and ethanol, phytochemical screening were confirmed by the presence of Tannins, Alkaloids, Saponins, Steroids, Flavonoids, Glycosides, Carbohydrates.

Keywords: Adhatoda vasica, Phytochemical screening, Pharmacognostic, etc.

1. Introduction

Adhatoda vasica, also known as malabar nut tree is part of the Acanthaceae plant family. It is a small evergreen, sub-herbaceous bush which grows commonly in open plains, especially in the lower Himalayas (up to 1300 meters above sea level), India, Sri Lanka, Burma and Malaysia [1].

The Vasaka plant perennial, evergreen and highly branched with unpleasant smell and bitter taste, the plant lives for multiple seasons and retains its leaves throughout the year. It is a shrub 1.0 m to 2.5 m in height, with opposite ascending branches [2].

It is a highly reputed plant used in Ayurvedic system of medicine for the treatment of various ailments of respiratory systems like bronchitis, asthma and it is also used in the treatment of malaria, dysentery and diarrhea [3] and has many other medicinal applications (2-4), it shows potent anti-inflammatory activity [4] and *Adhatoda vasica* was traditionally used by midwives at the time of delivery because of its uterotonic activity. Due to its anti-implantation activity, adhatoda should not be used while pregnant [5].

Adhatoda vasica Linn. Also has anti-inflammatory, analgesic, diarrhoea, dysentery, antioxidant, hepatoprotective, Sedative, antispasmodic, anthelmintic properties [6], Antimicrobial activity [7], Antidiabetic activity [8], Wound healing effect [9], Infertility [10], Anti-ulcer [11], Antibacterial [12], Antihistaminic effect, moderate hypotensive activity, thrombopoietic activity [13], Cardiac depressant, uterotonic and abortifacient. The leaves are found to activate the digestive enzyme trypsin. An extract of the leaves showed significant antifungal activity against ringworm [14].

2. Material and Methods

2.1 Plant collection

Leaves of *Adhatoda vasica* were collected from Papaura, District-Rewa, Madhya Pradesh, India. In May 2014, it was authenticated by Dr. J. R. Patel (Professor). Dept. of Pharmacognosy. KDF College of Pharmacy, RKDF University, Bhopal, Madhya Pradesh, India. The leaves were sun dried and make a powders were analyzed for following Pharmacognostic study and Phytochemical screening.

2.2 Pharmacognostic studies

2.2.1 Macroscopic

Morphological studies of leaves such as color, size, odor, taste, surface characteristic and fracture were given in Evans.

2.2.2 Microscopy

A transverse section of fresh leaf of *Adhatoda vasica* was taken and cleaned. A drop of

concentrated hydrochloric acid and phloroglucinol was used to detect the lignified cells in the cross sections and in the powder drugs. That was mounted slides in glycerine and studied under microscope.

2.2.3 Quantitative Evaluation

The moisture content of the vasaka powder was determined by the loss on drying method. The ash value and the acid insoluble ash value were determined using a method described in the British Pharmacopoeia. The extractive petroleum ether, diethyl ether, chloroform, 99% ethanol, methanol, hydro alcoholic and aqueous values were determined using methods described in Brain and Turner.

2.2.4 Phytochemical Screening

Preliminary phytochemical screening was performed in the extract of *Adhatoda vasica* in the presence of Alkaloids, Glycoside, Tannins, Flavonoids, Saponin and Reducing sugar groups.

3. Result and Discussion

3.1 Macroscopic character

Leaf are pale green, fruity in odor, bitter taste, oblong shape, 8.0-14.2 cm length and 4-5 cm width.

3.2 Microscopic character

Transverse section of leaf showed xylem, phloem, Lamina, collenchymas, epidermis, Palisade, Spongy, Mesophyll, abaxial surface (figure 1) and Prismatic form of calcium oxalate crystal present in Mesophyll, Palisade ratio 5-6, 5-8.5, Stomatal index 10.8- 14.2-18.1 for lower surface.

3.3 Physiochemical Studies

The moisture content was 10.2% (leaves). The other physiochemical parameters includes quality, purity and also help in evaluating the crude drugs, and the total ash value was 13.3% w/w, acid insoluble ash value was 1.0% w/w and water soluble ash value was 3.5% w/w (leaves) which are not more than respectively. This includes the presence of total foreign inorganic matter. While the study of extractive values can provide suitable standards determine the quality of plant material in future investigations or application (Table 1 & 2).

Table 1: Ash Value of Vasaka leaves

Sl. No.	Physical Contents	Value (%)
1	Total Ash value	13.5
2	Acid insoluble value	1.0
3	Water soluble value	3.5
4	Loss on drying	10.2

Table 2: The extractive Value study of Vasaka leaves

Sl. No.	Nature of extract	Colour	Percentage Yield (%)
1	Petroleum ether	Light yellow	0.7
2	Hydroalcoholic	Dark brown	16.6
3	Methanol	Green	8.3
4	Chloroform	Yellowish green	3.8
5	Ethanol	Pale green	4.6
6	Aqueous	Dark brown	32.8

3.4 Phytochemical Screening

Preliminary phytochemical screening was performed in the extract of *Adhatoda vasica* in the presence of Saponin, Alkaloids, Tannins, Flavonoids, Steroids, Carbohydrates, Vitamin C, Cardiac Glycoside and Reducing sugar groups (Table 3).

Table 3: Phytochemical screening of various extract of Vasaka

Sl. No.	Types of phytochemical	Types of extract		
		Methanol	Hydroalcoholic	Aqueous
1	Saponin,	++	++	++
2	Alkaloids	++	++	+
3	Tannins	++	++	+
4	Flavonoids	++	++	++
5	Steroids	++	++	+
6	Carbohydrates	+	+	+
7	Vitamin C	+	+	-
8	Cardiac Glycoside	+	+	-
9	Reducing sugar groups	+	+	-

+++ Present (clearly visible), ++ Present (dark), - Absent

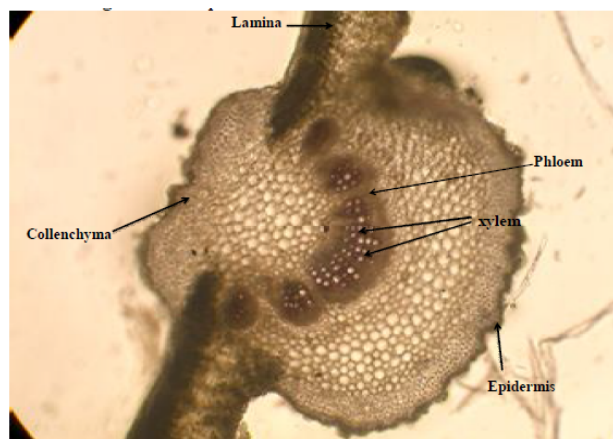


Fig 1: Microscopic Characters: T.S. of *Adhatoda vasica* leaf

4. Conclusion

The pharmacognostic studies of the leaves of vasaca were used in this morphological study of vasaca are unable to identify the crude drug. The information obtained from preliminary phytochemical screening will be use full in finding out the reality of the drugs, Ash values, extracting adulteration.

5. Acknowledgement

The author would like thanks to respected principal Dr. J.R. Patel, RKDF College of Pharmacy, Bhopal, Madhya Pradesh, for providing the facilities for this significant work and author also take this blessed opportunity to acknowledge my heartfelt gratitude to my beloved parents and wife for their constant support and encouragement.

6. References

- Shahriar M. Phytochemical screenings and Thrombolytic activity of the leaf extracts of *Adhatoda vasica*. The experiment. International Journal of science and technology 2013; 7(4):438-441.
- Arabind KVK, Garg RK, Singh L, Chauhan SS.

- Pharmacognostic Study and Establishment of Quality Parameters of Leaves of *Adhatoda vasica*. Linn. Journal of Medicinal Plants Studies 2013; 1(3):35-40.
3. Jain MP, VNG, Atal CK, Recent advances in vasaka alkaloids- a review Indian drugs 1984; 21:313.
 4. Chakraborty A, Brantner AH. Study of alkaloids from *Adhatoda vasica* Nees on their anti-inflammatory activity Phytother Res 2001; 15:532.
 5. Gupta AP, Anand KK, Ghatak BJR, Atal CK. Vasicine, Alkaloid of *Adhatoda vasica*, a promising uterotonic abortifacient. Indian J Exp Biol 1978; 16:1075.
 6. Mulla AW, More DS. Evaluation of anti-inflammatory and analgesic activities of ethanolic extract of roots *Adhatoda vasica* Lin. Int J Pharm Tech Res 2010; 2(2):1364-1368.
 7. Sheeba BJ, Mohan TS, Antimicrobial activity of *Adhatoda vasica* against clinical pathogens. Asian J Plant Sci Res 2012; 2(2):83-88.
 8. Bhatt M, Gahlot, M Juyal V, Singh A. Phytochemical investigation and antidiabetic activity of *adhatoda zeylanica*. Asian J Pharm Clin Res 2011; 4(2):27-30.
 9. Vinohapooshan G, Sundar K, Wound healing effect of various extracts of *Adhatoda vasica*. IJPBS 2010; 1(4):530- 536.
 10. Ganguli MD, Paramesh R. Clinical evaluation of Evecare syrup in the treatment of infertility in women: An open study. IJCP 2010; 20(11):767-771.
 11. Vinohapooshan G, Sundar K. Anti-ulcer activity of *Adhatoda vasica* leaves against gastric ulcer in rats JGPT 2011; 3(2):7-13.
 12. Kavitha G, Thenmozhi S, Rajan S. Screening of Antibacterial and phytochemical activity of *Adhatoda vasica* L against clinically isolated respiratory pathogens. IJPRBS 2012; 1(4):203-214.
 13. Mahajan N, Dhar KI, Suri OP, Nepali K, Kamra N, Garg A *et al.* Synthesis of some N-heterocyclic analogues of vasicine. IJPSR 2010; 1(2):78-86.
 14. Khare CP, Indian Medicinal Plants-An illustrated dictionary; Springer-Verleg Berlin, 2007, 18-19.