Research Article

Available online through
www.ijrap.net

IJRAP
ISSN 2229-3566

PRELIMINARY PHARMACOGNOSTICAL AND PHYTOCHEMICAL EVALUATION OF *ARGYREIA NERVOSA LEAF*

A. Krishnaveni*[1] and Sant Rani Thaakur[2]

[1]Research Scholar, Institute of Pharmaceutical Technology, Sri Padmavathi Viswavidhalyam, (Women's University), Tirupathi, Andhra Pradesh, India

[2]Professor, Dept. of Pharmacology, Institute of Pharmaceutical Technology, Sri Padmavathi Viswavidhalyam, (Women's University), Tirupathi, Andhra Pradesh, India

Received on: 12/01/2011 Revised on: 14/02/2011 Accepted on: 02/03/2011

ABSTRACT

Traditionally used by the tribal of Rajasthan to prevent conception. Roots are used as appetizer, aphrodisiac, brain tonic, cardiotonic and to treat insanity and synovitis. Leaves, seeds preparations are used to treat epilepsy, diarrhea and nootropic. Leaf materials were collected, dried and coarsely powdered and were subjected to physiochemical constants, behavioral characters of the leaf powder with chemical reagents. Pharmacognostical studies include macroscopical and microscopical observations. Physical chemical constants such as ash values, extractive values, loss on drying and foreign organic matter were determined. Ash values include total ash; acid insoluble and water soluble ash were observed. Extractive values of powder with solvents such as petroleum ether, chloroform, ethyl actetae, ethanol and water were determined. Macroscopical characters help in identifying the leaf. Anatomical observations showed the presence of trichomes, upper and lower epidermal cells with rubiaceous stomata. Sclerenchyma fibers and acicular crystal were observed. The percentage of total ash values (4.3, 1.6 and3.94 %) and extractive values with ethyl acetate, chloroform, ethanol and water showed 3.16,6.4,5.8,10.2 and 7.6% respectively. Preliminary phytochemical screening reported the presence of alkaloids, tannins, phenolic compounds, glycosides and flavanoids. The reported phytoconstitutents of the plant *Argyreia nervosa* may be responsible for the pharmacological activities. The results obtained add credit to the existing traditional information which will further increase the usage of this plant and provokes towards the investigation of the plant.

KEYWORDS: *Argyreia nervosa*, ethnomedicine, pharmacognostical evaluation.

***Corresponding author**

A. Krishnavneni,M.Pharm, (Ph.D), Research Scholar, Institute of Pharmaceutical Technology, Sri Padmavathi Viswavidhalyam, (Women's University), Tirupathi, Andhra Pradesh, India. Email: akrishnaveni72@rediffmail.com

INTRODUCTION

Argyreia nervosa belongs to Convolvulaceae commonly known as Elephant creeper. It is a climbing shrub with hard woody stalk bearing heart shaped leaves of 9-12 cm long and 8-10 cm breadth often cultivated throughout India. It is grown at an elevation of 900m. Leaves are larger, acute apex, cordate base, glabrous above and tomentose beneath. Flowers are large, purple silky pubescent with peduncled infundibula. Petals are purple, silky pubesecent outside and wooly glabrous inside. Calyxes are white, tomentose outside with glabrous ovary. Fruits are globose and indehiscent berry[3]. The plant also exhibited immune-modulatory effect[4], aphrodisiac[5], antidiarrhoeal[6], anticonvulsant[7], anti inflammatory[8], antireheumatic[9] and nootropic[10]. Previous studies revealed that there is no such standards were developed so far in this plant. The present study was undertaken to explore the preliminary pharmacognostical parameters of the plant *Argyreia nervosa.*

MATERIAL AND METHODS

Collection of the plant material

The leaf material was collected from the foothills of Tirumala, Tirupathi. The plant was identified and authenticated by Dr. Madhav Shetty, S.V.University, Tirupathi, and A.P.A voucher specimen was preserved in the college for further reference.

Processing of the plant material

The leaves were collected, shade dried, coarsely powdered passed through the mesh no 22 and were stored in an air tight container for further analysis.

Determination of physiochemical parameters

The powdered plant material was subjected for the determination of physiochemical parameters such as ash values, moisture content, foreign matter, extractives with various solvents as per Indian Pharmacopoeia[11] and results were presented in **table 1**.

Determination of fluorescence character

Fluorescence characters of the powdered plant material with different reagents was observed under visible light and UV light including short and long wavelength[12] and its results were depicted in **table 2**.

Preliminary phytochemical analysis

The powder was subjected to preliminary phytochemical analysis as per standard procedures described by Treas[13] and results were reported in **table 3**.

RESULTS AND DISCUSSION

Macroscopy

It is a climbing creeper with silky pubescent, ovate-cordate shaped leaves of acute apex, entire margin, and reticulate veneation, alternate with long and tomentose petiole. Flowers are purple and rarely white. Ovate and glabrous sepals are seen. Fruits are globose, dry indehiscent fruit, brown seeds of sub-cylindric, truncate apex and round base are observed (**figure 1**).

Microscopy

Argyreia nervosa leaves are dorsiventral in nature. Transverse section of the leaf showed the upper arched epidermal cells with rubiaceous stomata. Fibers were spreaded beneath the epidermis. Mesophyll includes sclerenchyma fibres in the form of extensions from the sheath around the vein. Small acicular crystal were formed in idioblasts of mesophyll[14] (**figure 2**).

CONCLUSION

Argyreia nervosa leaf powder was subjected to pharmacognostical evaluation including the anatomical studies, physiochemical constants and preliminary screening. The results of the present study adds more credit to existing ethnomedicinal information helps in formulation development and to draw pharmacopoeial standards which will be fruitful for the future researchers towards the investigation of new chemical entities.

REFERENCES

1. Anonymous, Wealth of India, CSIR, Govt of India, New Delhi: 1994:86-87.
2. Nandkarni KM. Indian Materia Medica, Bombay: Popular Prakashan PvtLtd, Vol 1:1995;136-137 .
3. PK Warrier, VPK Nambiar, C Ramankutty. PS Varier's Indian Medicinal plants Orient Longman; Madras 1996; I Edition: volume1: p191-195.
4. Gokhlae AB, Damre A Sand Saraf HN. Investigations into the immunomodulatory activity of *Argyreia nervosa*. Journal of Ethnopharmacolgy 2003; 84(1): 109-114.
5. Subramoniam A, V Madhavachandran, K Ravi, VS Anuja. Aphrodisiac property of Elephant creeper, *Argyeia nervosa* .Journal of Endocrinology Reproduction 2007; 2: 282-85.
6. Rao ChV, Ojha SK, Reddy GD, Rawat AKS, Rao GMM, Pushpangadan P. Antidiarrhoeal Activity of *Argyreia speciosa* Flower: an Ethnopharmacological Study. Acta Pharmaceutia Turica 2004; 46: 149-159.
7. Vyawahare NS, Bodhankar SL. Anticonvulsant Activity of *Argyreia speciosa* in Mice**.** Indian Journal of Pharmaceutical Sciences 2009: 131-133.
8. Bacchav AS, Gulache VS, Upasain CD. Analgesic and Anti inflammatory activity of *Argyreia nervosa* root**.** Indian Journal of Pharmacology 2009; 41(4):158-161.
9. Gokhlae AB, Damre AS, Saraf HN, Kulakni SK. Preliminary Evaluation for anti inflammatory and anti arthritic activity of *Saussrea lappa, Argyreia speciosa and Achyranthes aspera.* Phytomedicine 2002;9(5): 433-437.
10. Joshi H, Habbu PV, Mahadenen KM, Naveet K, Chauhan J, Krupa M. Evaluation of nootropic effect of *Argyreia nervosa* in mice**.** Journal of Health Sciences 2007; 53(4): 382-388.
11. Chase CR, Pratt RJ. Fluorescence of Powdered vegetable drug with particular reference to development of a system of identification. Journal of American Pharm Association 1949; 38: 324-331.
12. Anonymous, Indian Pharmacopoeia, New Delhi, Controller of Publications, 1996; Volume-II: Page No: A53.
13. World Health Organization- Geneva; Quality control methods for medicinal plant materials, First Indian Edition. New Delhi. AITBS Publishers and Distributors; 2000;46
14. Harbourne JB. Methods of Extraction and Isolation, In:Phytochemical Methods, Chapman&Hall, London 1998:60-66.
15. Metcalfe CR, Chalk L. Anantomy of Dicotyledons, Oxford Press (London): Publishers;1950;955-964.

Table 1: Physiochemical constants of *Argyeria nervosa*

S. No.	Parmateres	Reports(%w/w)
1	Total ash	4.3
2	Acid insoluble ash	1.6
3	Water soluble ash	3.94
4	Petroleum ether	3.16
5	Ethyl acetate	6.4
6	Chloroform	5.8
7	Ethanol	10.2
8	Water	7.6
9	Loss on drying	0.68
10	Foreign organic matter	1

Table 2: Behavior of leaf powder with different chemical reagents

S. No.	Particulars	UnderVisible light	UVlight
1.	Powder as such	Dull green	Dark green
2	Powdered drug + Conc. HCl	Dull green	Pale green
3	Powdered drug + Conc. H2SO4	Dull green	Pale green
4.	Powdered drug+Conc. HNO3	Yellow	Dull green
5.	Powdered drug+ Glacial Acetic acid	Dull green	Orange
6.	Powdered drug+ Aqueous NaOH	Dark green	Dark green
7.	Powdered drug + NaOH (Alcoholic)	Dark green	Dark green
8	Powdered drug + 10%Hcl	Dull green	Dull brown
9.	Powdered drug + 10% H_2SO_4	Dull brown	-----
10.	Powdered drug + 10% HNO_3	Dull green	Dark green
11.	Powdered drug + 10% Glacial Acetic acid	Dark green	Dark green
12.	Powdered drug + Ferric chloride(Aqueous)	Dark green	Dark green
13	Powdered drug + Ferric chloride(Alcoholic)	Dark green	Dark green
14	Powdered drug + water	Dull brown	Dark green

Table 3: Preliminary phytochemical screening of ethanolic leaf extract of *Argyreia nervosa*

S.no	Test for	Report
1	Alkaloids	+
2	Tannins	+
3	Phenolic compounds	+
4	Glycoside	+
5	Proteins	-
6	Flavanoids	+
7	Sterols	+
8	Fixed oil	-
9	Volatile oil	-
10	Triterpenoids	-
11	Saponins	-
12.	Sugars	+

Figure 1: Macroscopy of *Argyreia nervosa* (aerial)

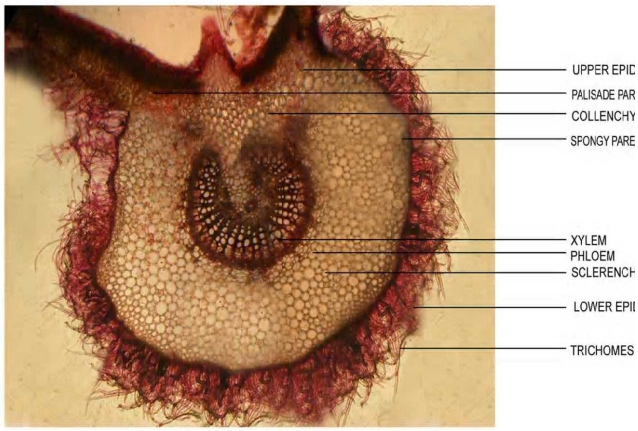

Figure 2: Transverse section of *Argyreia nervosa* leaf

Source of support: Nil, Conflict of interest: None Declared