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PHARMACOGNOSTICAL STUDY OF ROOT OF *HOMONOIA RIPARIA* LOUR. – A POTENT SOURCE OF PASHANABHEDA

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ABSTRACT

Background: Number of plants were used under the name of the Pashanabheda, which is known drug indicated in Ashmari, i.e. drug which is having potential to breakdown the urinary stones. Among many sources *Homonoia riparia* Lour is one of the important locally available botanical sources mentioned by author K.C. Chunekar in Bhavaprakasha Nighantu. Hence an attempt is made for Pharmacognostical Study of Root of *Homonoia riparia.* **Objective:** To establish the pharmacognostical and physiochemical standardization of root of *Homonoia riparia.* **Materials and Methods:** The roots were collected locally from Koppa. Macroscopical and microscopical studies were done for both root and powder of roots. Physico-chemical parameters were tested. The preliminary phytochemical tests were done to check presence or absence of primary and secondary metabolites from aqueous and alcoholic extracts. The fluorescence studies were done using acids and alkalies. Thin layer chromatography was done. **Results:** The root was brown externally and creamish to white internally when fresh. The outline of T.S. is almost circular. Zone of cortex traversed with sclereids at places due to this Some of the phloem cells were obliterated. Water soluble and alcohol soluble extractives were noted respectively as 31.324% and 15.75%. 10 spots were noted in thin layer chromatography.

Conclusion: The root of *Homonoia* was brown in color externally. Cluster of Rosette crystals were observed in powder charterstics. Radial type of vascular bundles observed. Stelar region contains cambium in Homonoia.

KEYWORDS: Homonoia riparia, Ashmari, Pashanabheda.

INTRODUCTION

Homonoia riparia (H. riparia). syn. Adelianerfolia**,** is an evergreen, erect, rigid dioecious small crooked shrub or twisted tree that belongs to Euphorbiaceae family (Biodiversity India, 2011).[1] It is a dioecious shrub growing to a height of 1.0 to 1.5 m in river banks with rocky boulders.[2] Widely distributed in Asia from India, throughout Indo –china to Taiwan and from peninsular Malaysia, throughout Indonesia, pacific islands, Philippines, java, Srilanka. In India kodachdri slopes, Thunga River and nearer to river streams throught distributed all over.[3]

Leaves: simple, alternate, stipule, keel like, enlarged at base, 5-6mm long caduceus, petiole 5-15mm long, flowers are small and unisexual in spikes; it bears capsular fruit with ovoid seeds.[4] It contains chemical constituents like Quercetin, gallic acid, taraxerone, Urosolic acid, lupeol.[5]

Medicinal uses of this plant is well studied, Seeds used in treating skin disease, ulcers, to clear bladder stones. Its root is used as laxative, diuretic, and to treat piles, stone in gall bladder, vesicle calculi, strangury, urinary discharges, emetic, urethrorrhea, gonorrhea, syphilis, odontalgia.[5]

Objective of the study

To Evaluate the Pharmacognostical Study of Root of *Homonoia riparia* Lour – A Potent Source of Pashanabheda".

MATERIALS AND METHODS

Source of Drug

The roots of *Homonoia riparia* Lour. were collected during October 2021 from location of Koppa, Karnataka, India.

Method of preparation

Roots were cleaned properly under running tap water and were dried under shade. They were cut in small pieces and powdered in pharmacy of our college. Powder was passed through mesh with pore size of 180µm (standard). Few of dried roots were stored in air-tight containers for macroscopical studies and some of them were preserved in water with 5% formalin for microscopical studies. Marcoscopical studies were done based on organoleptic characters and fracture.[6,7]

Microscopical studies were done by both transverse and longitudinal sections of root by simple mounting of powder.[6,7,8] Freehand sectioning method was applied.[8] Reagents used for identification of lignification, starch grains and other cell inclusions were from Sigma-Aldrich. The Dewinter's trinocular florescence microscope, classic-FL was used for anatomical studies and Dewinter camera attached with microscope was used for photomicrographs.

Physicochemical parameters were evaluated as per methods given in Ayurvedic Pharmacopeia of India.[7] Preliminary phytochemical analysis was done for both aqueous and alcohol extracts.[9,10] Fluorescence studies of powder was done using 10% of acids and alkalis. Thin layer chromatography was done using silica based chromatography plates and solvent system n-hexane, acetone and ethyl acetate in ratio of 8:0.5:0.5. The chemicals used for physicochemical parameters, preliminary phytochemical analysis, florescence tests and chromatography were from Nice chemicals.

OBSERVATIONS AND RESULTS

Microscopic Characters

The outline T.S is almost circular. The detailed T.S shows presence of secondary growth with age. In young root phelloderm was followed by a zone of cortex traversed with sclereids at places. The wall of sclereids were of different thickness. The endodermis was apparent followed by a zone of layer of phloem element, some of the phloem cells was obliterated, the broader area of section was covered by xylem elements consisting of vessels, tracheids, fibers and xylem parenchyma cells, 1-2 celled medullary was emerging from the pith towards periphery upto phloem cells.

Starch grains were abundantly present in the parenchyma throught the section including medullary rays, some clusters of calcium oxalate crystals were present in parenchyma cells of

cortex. In case of matured roots broader phelloderm was present, the cork cambium is responsible for girth cells of pericycle starts division to form a vascular cambium around primary xylem, the outer layer of cork cells was filled with pigments.

Powder Charters tics

The powder of the root was muddy brown in color, the odor was charters tic in nature and taste was astringent to bitter. Under microscope it exhibited characters including.

Table 1: Shows the results of Physiochemical parameters.

Physiochemical parameters	Values in%
Foreign matter	0.21%
Moisture content	2.34%
Total ash	6.831%
Acid insoluble ash	0.9123%
Water insoluble ash	3.348%
Water soluble extractive	31.324%
Alcohol soluble extractive	15.75%
pH (10%o aqueous solution)	6.23 + 0.10

Table 2: Shows the results of preliminary phytochemical tests.

Phytochemical constituents	Aqueous extract	Alcohol extract
Carbohydrates	Present	Present
Proteins	Present	Present
Tannins	Present	Present
Triterpenoids	Present	Present
Flavonoids	Present	Present
Antraquinone glycosides	Present	Present
Cardiac Glycosides	Present	Present
Alkaloids	Absent	Present

Table 3: Shows the results of Fluorescence tests.

***Homonoia riparia* Lour**		
Powder	**Under Visible light**	**Under Long UV**
Sample + water	Light Peach	Fluorescent Cream
Sample + MeOH	Light Pink	Fluorescent Yellow
Sample + 10% NaOH	Brownish Yellow	Fluorescent Green
Sample + 10% HCI	Light pink	Fluorescent Green
Sample + 10% HNO3	Pinkish Brown	Fluorescent Green
Sample + 10% H,SO4	Creamish Pink	Fluorescent Yellow
Sample + 10% NH,	Brownish Yellow	Fluorescent Green
Kashaya	**Under Visible light**	**Under Long UV**
Sample + water	Light Peach	Fluorescent Cream
Sample + MeOH	Light Pink	Fluorescent Yellow
Sample + 10% NaOH	Orangish Yellow	Fluorescent Green

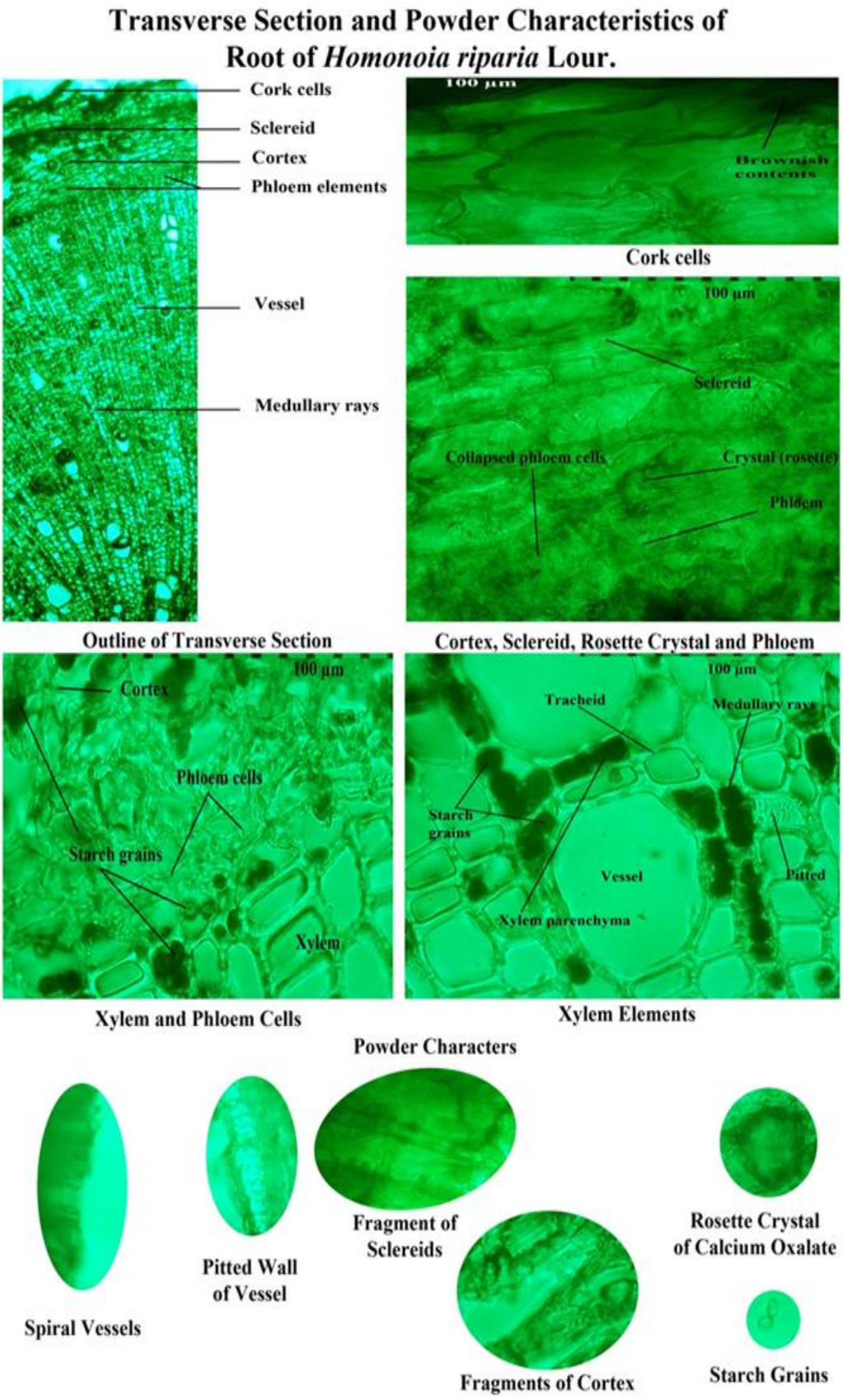
Sample + 10% HCI	Light pink	Fluorescent Cream
Sample + 10% HNO3	Brownish pink	Fluorescent Green
Sample + 10% H,SO4	Light Pink	Fluorescent Cream
Sample + 10% NH,	Orangish Yellow	Fluorescent Green

Thin Layer Chromatography - No spots were observed under visible light. Under long UV light spots with different Rf values and varying colours were observed as given in table number: 4. (Plate Number: 10)

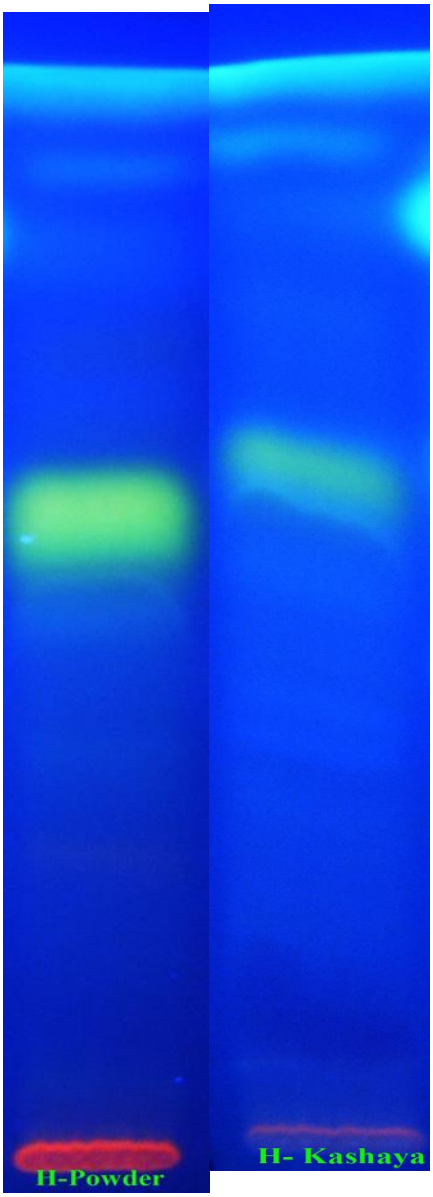
Table 4: Shows the No Of Spots Observed Under Long Uv Light.

Under Long UV		
Retention factor Value	***Homonoia riparia* root Powder**	***Homonoia riparia* root Kashaya**
0.02	Green	Orange
0.08	Light fluorescent blue	Light fluorescent blue
0.36	Light fluorescent green	Light fluorescent green
0.40	Light fluorescent green	Light fluorescent green
0.50	-	Light fluorescent green
0.54	Fluorescent green	Fluorescent green
0.62	Bright fluorescent Orange	Bright fluorescent Orange
0.72	-	Fluorescent Blue
0.88	Fluorescent green	Fluorescent green
0.92	Fluorescent green	Fluorescent green

P. No. 1: Dry Root P. No. 2: Root Powder P. No. 3: Kashaya



P. No. 4: Transvers Section.



P.No.5: TLC Plate.

DISCUSSION AND CONCLUSION

The macroscopical studies revealed fibrous fracture as lignified fibers were noted in microscopical studies. Clusters of calcium oxalate crystals were rarely observed in collected samples. Total ash noted as 6.81% shows inorganic contents of drug that do not evaporate or convert to gaseous temperature at prescribed temperature. 3.348% were insoluble in dilute hydrochloric acid. The water soluble extractives and alcohol soluble were noted 31.324% and 15.75%respectively. This indicates the presence of more water soluble extractives like flavonoids, glycosides etc than alcohol soluble. The pH values of *Homonoia riparia* root powder IS 6.23, which shows the formulation is slightly acidic. The preliminary

phytochemical tests of aqueous extracts and alcoholic extracts exhibited similar result except alkaloid as alkaloids are not soluble or poorly soluble in water.

Thin Layer Chromatography of hydro-alcoholic extracts of root of *Homonoia riparia* compared with Kashaya (decoction), both exhibited specific patterns of compounds, eight spots were seen in root powder of *Homonoia riparia* whereas ten spots were observed in Kashaya. Compound having Rf value 0.50 and 0.72 were present with kashaya sample except for root powder of *Homonoia ripria*. Detailed studies are required to under the effects of various compounds for specific purpose. Isolation and identification of compounds and their pharmacological effects are matters of further research. Even other parts of plant have potentials for pharmacognostical studies.

REFERENCE

1. Biodiversity India. Biodiversity India, 2011. *Homonoiaripari*aLour. http://indiabiodiversity.org/species/show/13207.
2. Nair K. V., Yoganarasimha S. N., Keshavamurthy K.R., Mary,Z. Studies on some South Indian market samples of Ayurvedic drugs -I. Ancient Sci Life, 1982; (2): 71-8.
3. Dr. Chandra Barooah&Iftikher Ahmed Assam Science Technology and Environment Council, 2014.
4. B. R. Ramesh, N. Ayyappan, Pierre Grard, Juliana Prosperi, S. Aravajy, Jean Pierre Pascal, The Biotik Team, French Institute of Pondicherry.
5. Evaluation of HomonoiaripariaLourAntiurolithiatic Activity in Albino Rats Authors: K.V.S.R.G. Prasad; R. Abrham; K. Bharati; K. Srinivasan DOI: 10.1076/phbi.35.4.278. 13309 Publication Frequency: 12 issues per year Published in: Pharmaceutical Biology, Volume http://www.informaworld.com/smpp /tittle~db=all~content =t713721640~tab= issueslis t~branches=35-v3535, October 1997; 4: 278-283.
6. Anonymous. Quality Control Methods for Medicinal Plant Materials. World Health Organization, 1998.
7. API: The Ayurvedic Pharmacopoeia of India, 1st edition, Part I, Volume I. Delhi (IN): Government of India, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homoeopathy, 2001.
8. Yeung, E.C. A Guide to the Study of Plant Structure with Emphasis on Living Specimens. In Editors Yeung, E.C., Stasolla, C., Summer, M.J. and Huang, B.Q. Plant Microtechniques and Protocols. p.5. Springer International Publishing Switzerland, 2015.

9. Shah, B. and Seth, A.K. Textbook of Pharmacognosy and Phytochemistry. Reed Elsevier India Private Limited, 2010.
10. Harborne, J.B. Phytocehmical Methods: A Guide to Modern Techniques of Plant Analysis. Chapman and Hall Ltd., 1973.