

PHARMACOGNOSTICAL EVALUATION OF *PAJANELIA LONGIFOLIA* (WILLD) K. SCHUM BARK

Padyana Subrahmanya¹, Rao Radhakrishna², M. Ashalatha³, Jha Prashanth Kumar⁴

¹Alva's Ayurveda Medical College Moodbidri, Karnataka, India

²Prof. of Botany, Udupi, Karnataka, India

³Govt Ayurveda Medical College, Bangalore, Karnataka, India

⁴ALN Rao Memorial Ayurvedic Medical College, Koppa, Karnataka, India

Received: 28-09-2010; Revised: 20-10-2010; Accepted: 25-10-2010

ABSTRACT

Pajanelia longifolia (Willd.)K.Schum. belongs to the family Bignoniaceae which is a successful Ethnomedicinal plant in skin disease, particularly in Eczema, commonly used by the folklore practitioners of the Kalanjimale Range in Dakshina Kannada District of Karnataka state. Hence to explore its identity, the pharmacognostical study of the Bark of the plant *Pajanelia longifolia* (Willd.) K. Schum is undertaken.

The bark is very thick with rhytidoma which is peeled off. The cells of cork contain dark colouring matter. The secondary phloem is with patches of lignified cells in rows, interrupted by uniseriate ray cells and other phloem elements. Prismatic crystals of calcium oxalate of various shapes and sizes are present in cork region and parenchyma cells. Powder microscopy shows the presence of fragments of fibres, cork cells and crystals of calcium oxalate.

KEYWORDS: *Pajanelia longifolia* (Willd.)K.Schum, Bark, Ethnomedicine, Kalanjimale Range, Pharmacognostical study.

*Corresponding Author

Dr. Subrahmanya Padyana M.D. (Ayu.)

Assistant Professor and Head of the Department,

Department of Post Graduation Studies in Dravyaguna Vijnana

Alvas Ayurveda Medical College, Moodbidri-574227

Dakshina Kannada District, Karnataka, India

e-mail: drsp28 @ gmail.com

Mobile Number: +91-09448327156

INTRODUCTION

India is known to be the treasure of medicinal plants which forms one of its natural wealth. In the recent decades, the herbal remedies and the folklore medicines are becoming increasingly popular. Herbs are used by many Ayurvedic physicians and Ethno medical practitioners in the various types of ailments of the human being and animals¹. For all these medicaments we are depending on the forest which is having diverse types of plants. Recent ethnobotanical surveys have given valuable information about the medicinal uses of certain medicinal plants.

The Kalanjimale Range is one of the foot hills of the Western Ghats found in the Dakshina Kannada (D.K.) District of Karnataka State. The forest is rich with wide range of herbal wealth and many ethnomedical practitioners are utilizing this herbal wealth for the human health. Hence an ethnomedicobotanical survey has been carried out during 2006-2008 at Kalanjimale range. About 215 plants are documented for their ethnomedical uses during this period. The *P. longifolia* locally known as Bondubale in Kannada, is one such plant, the bark is being used to treat skin diseases mainly in Eczema and wounds by the ethno medical practitioners of Kalanjimale Range.

While reviewing the literature, it has been found that the plant is known as 'Kotru' in Kannada². The bark is being used internally in Skin diseases in the form of decoction and also for washing the Wounds². The earlier information on the pharmacognostic studies of the root of the plant is lacking. Hence to explore its identity, the pharmacognostical study of the Bark of the plant *P. longifolia* is undertaken.

MATERIALS AND METHODS

The barks of the plant *P. longifolia* were collected from the Kalanjimale Range, Bantwal Taluk, D. K. District of Karnataka and was authenticated by the expert Botanist. A voucher specimen (AAMC/SP/71) of the plant is deposited in the herbarium of the Department of P.G. Studies in Dravyaguna, Alva's Ayurveda Medical College, Moodbidri.

Free hand sections of the root of *P. longifolia* were taken for the microscopic studies by following the plant microtechnique³. The sections were first stained with iodine to examine their nature. Further, the sections were cleared with chloral hydrate to observe cell contents like crystals of calcium oxalate, non lignified tissues etc. The sections were also stained with various reagents like phloroglucinol, HCl and iodine. Powder slides of various parts were separately prepared by using distilled water, iodine, chloral hydrate, phloroglucinol and HCl^{4,5}.

RESULTS AND DISCUSSION

Morphology

It is a deciduous tree. Leaves opposite, pinnately compound, up to 90cm long; leaflets 13-15cm long, very obliquely ovate, acute or acuminate at apex. Panicle up to 90cm long. Calyx 2.5cm long. Corolla up to 8cm long, white in the tube, crimson-purple on the lobes; lobes woolly ciliate. Capsules up to 50cm long, brown⁶.

Macroscopy

The bark is flat with thickness of 0.5-1.2 cm. The colour is greenish-grey externally and creamy-brown internally. Outer surface is rough with longitudinal striations and transversely elongated lenticels. Inner surface is smooth with peeling of fibres. Fracture is brittle and fibrous. Odour is faint characteristic with taste predominantly bitter and slightly astringent.

Microscopy

The outer bark or rhytidoma is present deepening to the phloem portion and forming the separate structure. The rhytidoma develops in the bark region as the outer periderm is cut off from the inner periderm due to the lack of water and nutrient supply, and thus is peeled off. Next to the rhytidoma is cork with 30-40 layers of cells. In this region secretory cells are present. The cork cells are suberized and are filled with colouring matter. Within this cork is cork cambium or phellogen, which cuts off phellogen or secondary cortex on inside. This cortex is better exposed in newly formed portion, while it is crushed in rhytidoma. The secondary phloem consists of 7-9 rows of lignified fibres in patches interrupted by

uniseriate ray cells and other phloem elements. The secondary phloem is stratified into narrow fibrous and broad parenchymatous zones. Prismatic crystals of calcium oxalate of various shapes and sizes are present in cork region and parenchyma cells.

Powder Microscopy

Powder is brown in colour with characteristic odour. It is rough to touch with bitter and astringent taste, slightly sweetening at the end. Microscopically it shows the presence of fragments of lignified fibres with septate wall and Cork cells in surface and sectional view. Fragments of parenchyma cells from cortex and rays cells are present along with or without phloem elements. Prismatic crystals of calcium oxalate of various size and shape are found in the powder.

CONCLUSION

The plant Bondubale in Kannada is conclusively identified as *P. longifolia*. The bark of the plant is used both internally and externally in the disease eczema and wounds by the local ethnomedical practitioners since long period. The bark with peeling rhytidoma and the secondary phloem is with patches of lignified cells in rows, interrupted by uniseriate ray cells are the distinguishing characters of the present study. However, further studies like phytochemical, toxicity and clinical studies may be conducted to explore its utility.

REFERENCES

1. Singh V. Indian folk medicines and other plant based products. 1st edition, Jodhpur: Scientific Publishers (India); 2001.
2. Bhat Satyanarayana. Janapada Vaidyadalli Sasya Vaividhya(Kannada). 1st edition, Bangalore:M.R.L. Infotech Service; 2004.
3. Johansen DA. Plant microtechnique. 1st edition, New York: McGraw Hill Book Co; 1940.
4. Subrahmanya P. Pharmacognostic Studies on Kuchandana (*Adenanthera pavonina* L.), Humdard Medicus; Volume XLVIII, No. 2: 41-48; 2005.
5. Wahi AK, Awadhesh Prasad and Agarwal VK. Comparative macro- and microscopic studies of authentic and commercial samples of stem bark of *Oroxylum indicum* Vent., Indian Drugs 26, 12, 723-725; 1989
6. Bhat Gopalakrishna K. Flora of Udupi. 1st edition, Udupi: Indian Naturalist Publishers; 2003.
7. Mathur Jaya, Khatri Pankaj, Samanta Kartick chandra, Sharma Ashish, Mandal Subhash. Pharmacognostic and preliminary phytochemical investigations of *Amaranthus spinosus* (linn.) leaves, International Journal of Pharmacy and Pharmaceutical Sciences 2010; 2(4)

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