

Pharmacognostic Analysis of Stem Bark of *Combretum albidum* G. Don; An Unexplored Medicinal Plant

Sreekanth Sreedhar, U Prakash Kumar and A.B. Rema Shree*

Centre for Medicinal Plants Research, Arya Vaidya Sala, Kottakkal, Malappuram, Kerala- 676 503

ABSTRACT

Traditional knowledge and ethno-botanical use of plants have been widely acknowledged all over the world. Certain tribal people of Chinnar, Idukki District of Kerala are using stem bark of *Combretum albidum* G. Don as an effective remedy for jaundice. The documentation of traditional knowledge from Chinnar area reveal that it is highly effective. So the validation and standardisation of stem bark of *C. albidum* was carried out to establish its macro- and microscopical standards, physicochemical parameters, preliminary phytochemical investigation and TLC profiles to evaluate the characters of the plant. The stem bark is usually hard with longitudinal cracks, around 0.5 to 1 cm in thickness, internally bright yellow in colour, odourless and slightly bitter in taste. Detailed anatomy showed the presence of cork, cortex and secondary phloem embedded with elongated lignified phloem fibres. Histochemical studies revealed the presence of lignin, tannin, oil and starch grains. Physicochemical parameters like moisture content, total ash, alcohol and water-soluble extractive values were also evaluated. Preliminary phytochemical analysis indicated a high percentage of tannins, flavonoids and triterpenes and this may be one of the reasons behind the hepatoprotective activity of this plant. Well resolved TLC profiles were recorded in sequential extraction with petroleum ether, ethyl acetate and methanol. The above parameters, which are being reported for the first time in this plant, are significant towards establishing the pharmacognostic standards for future identification and authentication of genuine plant material used for Jaundice by Chinnar tribals of Kerala.

Key words: *Combretum albidum*, histochemical study, pharmacognostic standardisation, physico-chemical parameters.

INTRODUCTION

As a result of the adverse effects associated with synthetic drugs, people started looking back at the ancient healing systems like Ayurveda, Siddha and Unani. Herbal drugs play an important role in health care programs especially in developing countries. However, obstacle behind the acceptance of alternative medicines in developed countries is the lack of documentation and stringent quality control. So the documentation and standardization of the raw materials used in herbal medicine is very essential for the worldwide acceptance of this system of medicine. Correct identification and quality assurance of plant material is indispensable to ensure reproducible quality of herbal medicine, which will contribute to its safety and efficacy. Pharmacognostic standardisation of plant material include

its morphological (organoleptic), anatomical and biochemical characteristics^[1].

The Muthuvans, Chinnar tribe of Idukki district, Kerala is using many plants for their health care and day to day ailments but many of them are not yet scientifically validated. This tribe is using a plant called Manjakody as an effective remedy for jaundice. It is identified as *Combretum albidum* G. Don of the family combretaceae. Though *Phyllanthus amarus* and *P. airy-shavii* are very common there and they are aware of the use of these plants, they prefer water extract of stem bark of *C. albidum* as a remedy for both normal and severe jaundice^[2]. As far as the available literature is concerned, this plant has not yet been scientifically validated. *C. albidum*, Buffalo calf plant in English, is a large woody climbing, deciduous shrub, up to 30 m high. Its distribution is restricted to semi-evergreen and deciduous forests, along river banks of Peninsular India and Sri Lanka. In the present study, pharmacognostic standardisation of stem bark of *Combretum albidum* was carried out to establish its macro- and microscopical standards, physicochemical parameters, preliminary phytochemical investigation and TLC profiles to characterise the plant material.

*Address for correspondence:
E-mail: remashree@gmail.com

DOI: 10.5530/pj.2012.28.3

MATERIALS AND METHODS

Collection and Authentication

The plant collected from Chinnar, Idukki district of Kerala was authenticated at Taxonomy Division, Centre for Medicinal Plants Research (CMPR), Arya Vaidya Sala, Kottakkal, Kerala. The voucher specimen (Col. No. 5545) and raw drug (Col. No. CMPR/RD 211) were deposited at CMPR herbarium and raw drug depository respectively. One part of heart wood was preserved in Formalin: Acetic acid: Alcohol mixture (FAA) for anatomical studies and the remaining part shade dried and powdered for the estimation of physico-chemical parameters and preliminary phytochemical investigation.

Pharmacognostic Standardization

Organoleptic characters such as shape, size, colour, odour, taste and fracture of stem bark were determined. Microscopic studies were carried out by preparing thin hand section of stem bark cleared with chloral hydrate solution, stained with Phloroglucinol-hydrochloric acid (1:1) and mounted in glycerine^[3,4]. Histochemical studies and powder microscopy were carried out to know about the inclusions and detailed anatomical characters of the material^[5].

Physico-chemical Evaluations

Moisture content, total ash, acid-insoluble ash, alcohol and water-soluble extractive values were carried out as described in Indian Pharmacopoeia^[6].

Preliminary Phytochemical Screening

The methanolic extract of stem bark was subjected to tests for the presence or absence of the major class of compounds by standard methods^[7].

TLC profile

Powdered stem bark, 10 g was extracted by refluxing with petroleum ether, ethyl acetate and methanol (50 ml × 3) sequentially for a period of 30 minutes each and the combined extract of each were filtered and concentrated to 10 ml. Apply 10 µl each extract as bands at a height of 10 mm from the base of a 5 × 10 cm precoated silica gel Aluminium plate 60 F₂₅₄ using CAMAG Automatic sampler (ATS4) and developed up to 80 mm from the base of the plate in an Automatic Developing Chamber (CAMAG ADC2) using the mobile phase hexane: ethyl acetate (9:1) v/v for petroleum ether, chloroform: ethyl acetate: formic acid (8:2:1) v/v for ethyl acetate and ethyl acetate: formic acid (9:1) v/v for methanol extract. Dry the plate in air and profile pictures were taken in CAMAG documentation visualizer attached with DXA252 camera under UV 254 nm, 366 nm and in visible light after derivatization with anisaldehyde sulphuric acid reagent (ANS).

RESULTS AND DISCUSSION

Morphological characters: Drug occurs in pieces of variable size and thickness, surface rough due to longitudinal cracks and raised lenticels, recurved, channelled to half quilled, greyish to dark brown externally and internal surface fibrous and bright yellowish in colour (Figure 1), odourless, slightly bitter in taste; on drying, the stem bark becomes curved and the rhytidoma gets separated from the bark.

Anatomical characters: Mature bark showed 8 to 15 layers of cork consisting of tangentially elongated storied cells and dead tissues of rhytidoma. The cells of the outer and inner cork are lignified, varying in size and shape filled with yellow brown contents. The cortical cells are thin-walled embedded with stone cells and prismatic crystals of calcium



Figure 1: *Combretum albidum* G. Don

Download English Version:

<https://daneshyari.com/en/article/2495789>

Download Persian Version:

<https://daneshyari.com/article/2495789>

[Daneshyari.com](https://daneshyari.com)