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Pharmacognostic Study of *Michelia champaca* Linn. Root

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Abstract

Plant have been the basis for the medical treatment through much of the human history and such traditional medicine is still widely practiced today. Herbalism ("herbology" or "herbal medicine") is use of plants for medicinal purposes, and the study of such use. Modern medicine, does, however, make use of many plant-derived compounds as the basis for evidence-tested pharmaceutical drugs, and phytotherapy works to apply modern standards of effectiveness testing to herbs and medicines that are derived from natural sources. In this present study, the pharmacogostical parameter was evaluated for the crude drug powder of *Michelia champaca* Linn. Root in order to evaluate the quality and purity of drug. So, the novelity of this work is to find the pharmacognostic evaluation of *Michelia champaca* root, to control the quality and purity of crude drug which will help to standardize the crude drug. This study supports that the root of this plant has hepatoprotective potential and can be used for the ailment of various liver associated complication.

Key-words: Hepatoprotective, herbal, plants, *Michelia champaca*

Introduction

During the past three decades, herbal research has produced a flood of studies offering compelling evidence that herbal medicine help to prevent slow or even reverse chronic ailments. Herbal medicine is still the mainstay of about 75-80% of the world population, mainly in the developing countries, for primary healthcare because of better cultural acceptability, better compatibility with the human body and lesser side effect. [1-2]

Material and Methods

Selection collection and authentication of plant

The roots of *Michelia chmapaca* Linn. were collected and purchased from city market. The whole plant material was taxonomically indentified by **Dr. Madhu Rajput**, The Principal of **The City college Gwalior**. voucher specimen number **TCC/12-13/338** was deposited at the college.

Macroscopic and organoleptic evaluation of powder crude drugs[3]

Untreated samples of powder drug were examined under diffused daylight. An artificial light source with wavelength similar to those of daylight was used. The color of the powder crude drug sample was observed and recorded.

A small portion of the powder sample was placed on the palm of the hand and the air was inhaled over the material slowly and repeatedly to identify the odour or smell of crude drug sample.

Fluorescence Analysis

Many crude drugs show the fluorescence when the sample is exposed to ultraviolet radiation. Evaluation of crude drugs based on fluorescence in daylight is not much used, as it is usually unreliable due to the weakness of the fluorescence effect. Fluorescence lamps are fitted with suitable filters, which eliminate visible radiation from the lamp and transmit ultraviolet radiation of definite wavelength. Several crude drugs show characteristic fluorescence useful for their evaluation. Fluorescence analysis is one of the important pharmacognostic procedures useful in the identification of authentic samples and recognizing adulterants.[4,5]

A small amount of powdered drug was placed on micro slide and observes under UV 366 nm, UV 254 nm and in day light to observe the fluorescent characteristics of the powder. After that a small amount of powdered drug was placed on a micro slide and treated with various chemical reagent and observe under UV 366 nm and UV 254 nm and in day light while wet.

Microscopy of Root and Powder of Crude Drug

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The root material was first softened with boiling water and then taken for section cutting after 20min. The microscopic characters of transverse sections of the root and powdered material were first observed directly under microscope to see any calcium oxalate crystals and starch grains. Then the sections and powdered material was kept into bleaching solution (sodium hypochlorite solution) for 15-25 min. The partially decolorized sections were observed under microscope in different magnifications e.g. 50X, 100X and 400X. Then the decolorized sections were treated with phloroglucinol HCl solution for lignins, acetic acid solution and dilute sulphuric acid solution for calcium oxalate crystals and saffranin.

Results and Discussion

The plant *Michelia Champapca* is an indigenous tree which was chosen for this study. The plant belongs to the family Magnoliaceae. The scanty availability of information on this plant facilitates the study on it. The attempt is made to study the Pharmacognostical and pharmacological activity of root of this plant. The study was carried out as follows viz. Pharmacognostical studies

Pharmacognostical studies

Macroscopic and Organoleptic Evaluation of Powder Crude Drugs

The findings of macroscopic parameters are recorded as follows

Table 1: Macroscopic and organoleptic characters of powder crude drugs

S. No	Drug	Nature	Color	Odour	Taste
1.	*Michelia champaca*	Coarse powder	Brown	Characteristic	Bitter

Fluorescence analysis of powder crude drug

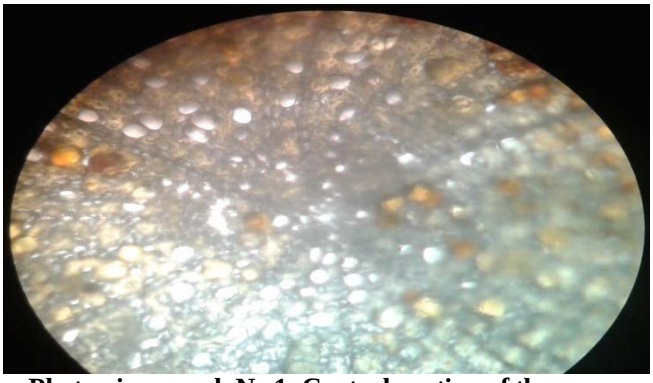
The fluorescence nature of powder drug was analyzed and the observations with different chemicals were also carried out and the observations are as follows[5]

Table 2: Showing the effect of different chemical reagents on the fluorescence behavior of crude drug powder

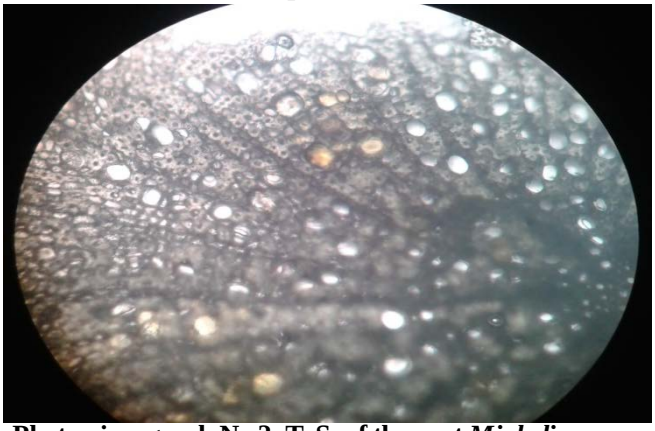
Treatment	Day light	UV light 254 nm	UV light 366 nm
Powder as such	Light Brown	Dark Brown	Fluorescent Yellow
Powder + 1N NaOH in water	Yellowish Brown	Greyish Yellow	Yellow
Powder + 1N NaOH in MeOH	Yellowish Brown	Brown	Pale Green
Powder + 1N HCl	Brown	Greyish Yellow	Brown
Powder + 50% KOH	Yellowish Brown	Greyish Yellow	Fluorescent Blue
Powder + 50% HNO_3	Brown	Yellow	Fluorescent Blue
Powder + 50 % H_2SO_4	Brown	Yellow	Light Green
Powder + Conc. HNO_3	Reddish Brown	Yellow	Fluorescent Blue
Powder + Conc. H_2SO_4	Brown	Greyish Yellow	Light Green
Powder + iodine in water	Black	Brown	Fluorescent Blue

Microscopy of root and powder crude drug

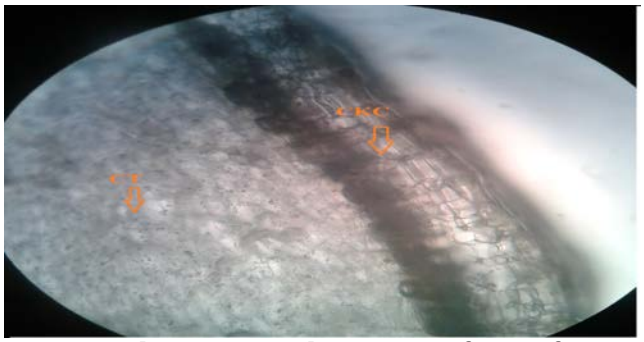
The microscopic observations are shown in Photomicrographs No 1 to No. 11.



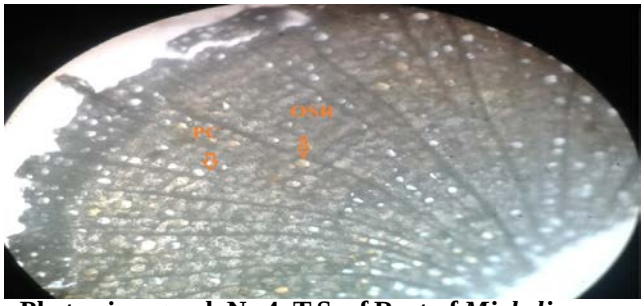
Photomicrograph No.1 Central portion of the root *Michelia champaca* Linn. at 100 X



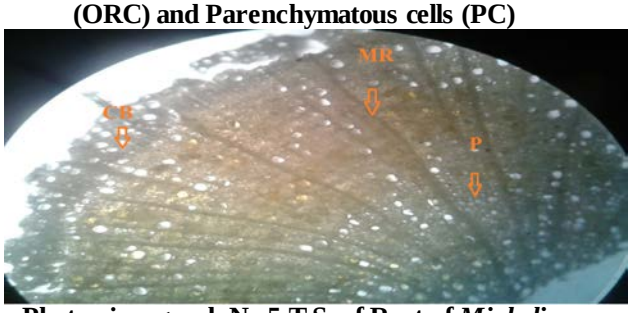
Photomicrograph No.2 T. S. of the root *Michelia champaca* Linn. at 100 X



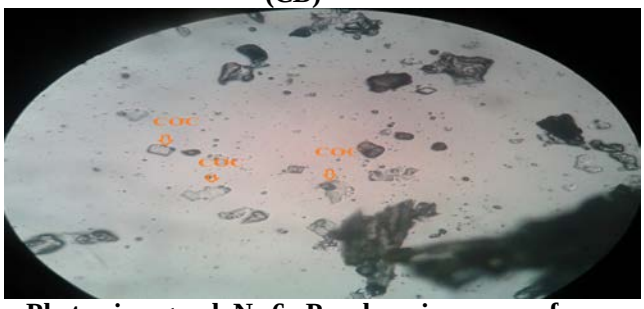
Photomicrograph No.3 T.S. of Root of *Michelia champaca* Linn. at 100 X showing Cortex (CT) and Cork cells (CKC)



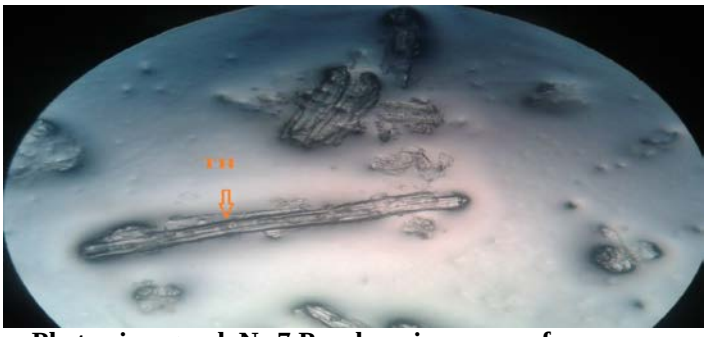
Photomicrograph No.4 T.S. of Root of *Michelia champaca* Linn. at 50 X showing Oleo resin cell (ORC) and Parenchymatous cells (PC)



Photomicrograph No.5 T.S. of Root of *Michelia champaca* Linn. at 50 X showing Prominent medullary rays (MR), Pholem (P) and Cambium (CB)

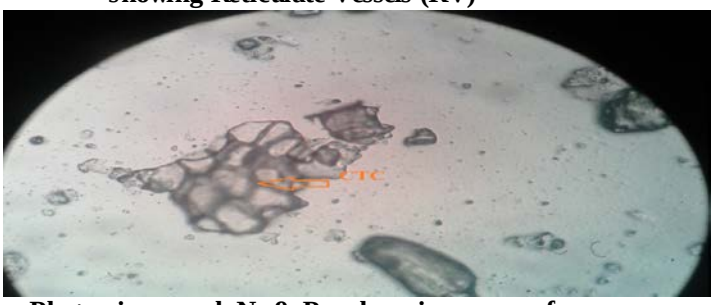


Photomicrograph No.6. Powder microscopy of Root of *Michelia champaca* Linn. at 100 X showing Calcium oxalate crystals (COC)

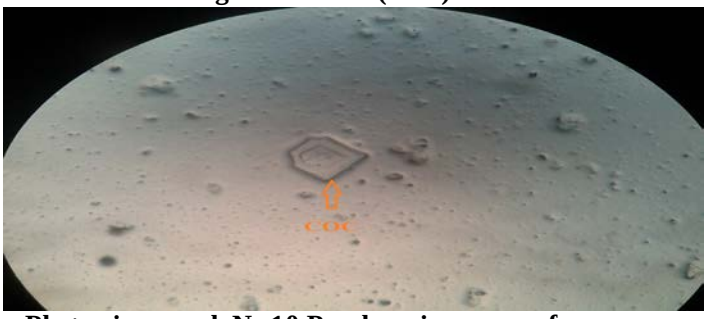


Photomicrograph No.7 Powder microscopy of Root of *Michelia champaca* Linn. at 100 X showing Tracheids (TH)

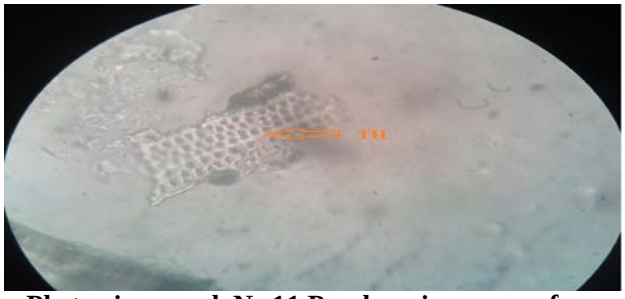
Photomicrograph No 8. Powder microscopy of Root of *Michelia champaca* Linn. at 100 X showing Reticulate Vessels (RV)



Photomicrograph No.9. Powder microscopy of Root of *Michelia champaca* Linn. at 400 X showing Cortex cells (CTC)



Photomicrograph No.10 Powder microscopy of Root of *Michelia champaca* Linn. at 400 X showing Calcium oxalate crystals



Photomicrograph No.11 Powder microscopy of Root of *Michelia champaca* Linn. at 100 X showing Tracheids (TH)

Conclusion

In this research work root of michelia champaca was investigated and the root of this plant can be used as hepatoprotective agent. As it is having a good safety profile, better patient tolerability and an effective drug at an affordable price, in near future new derivatives or new combinations of this drug may prove to be useful.

Pharmacognostic evaluation like macroscopic, microscopic and organoleptic studies of any crude drugs may be an important characteristic feature for identifying the plant. In the present study, the crude drug powder of *Michelia champaca* Linn. root was evaluated on various pharmacognostical parameters in order to evaluate the quality and purity of drug . However, no scientific report or work has been done on its root part. So, attempt has been made for the first time to establish scientific evidence about pharmacognostic evaluation of *Michelia champaca* root, to control the quality and purity of crude drug which will help to standardize the crude drug.

The hepatoprotective potential of this plant may be attributed to its antioxidant nature and presence of phytochemicals such as flavonoids, tannins, saponins etc. So that, further investigation can be carried out on identification and isolation of the active constituents, which are responsible for hepatoprotective potential or development of herbal formulations using active constituents to treat liver diseases.

References

1. Md. Mokarram H. Antioxidant, analgesic and cytotoxic activity of *M. champaca* Linn. leaf, Stamford Journal of Pharmaceutical Sciences S. J. Phar Science 2 (2), Page No.1-7.
2. Khan M. R., Kihara M., Omoloso A. D., Antimicrobial activity of *M. champaca*, Fitoterapia 2002; 73, Page No. 744-748.
3. Trease & evans W. C., Pharmacognosy, Elsevier Science Publication, 15th edition, 2002, Page No. 523-525.
4. Tyler V. E., Brady L. R. and Robbers J. E. "Pharmacognosy", Lea & Febiger, Philadelphia, 24, (1976).
5. Woltering, E. J. and Van Doon W. G., Journal of Experimental Botany,1988, Page No.1605-1616.
6. Radha KD, Yogesh KC. Herbal medicines for liver diseases. Digestive Diseases and Sciences, 2005, 50(10): 1807–1812.
7. Thyagarajan SP, Jayaram S, Gopalakrishnan V, Hari R, Jeyakumar P, Sripathi MS. Herbal medicines for liver diseases in India. J Gastroenterol Hepatol 2002, 17 (Suppl 3): S370-6.
8. Handa SS, Sharma A, Chakraborti KK. Natural products and plants as liver protecting drugs. Fitoterapia 1986, 57(5): 307-352.

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