Available online on www.ijcpr.com
International Journal of Current Pharmaceutical Review and Research, 3(3), 54-59

ISSN: 0976-822X

Research Article

Phytochemical and Microscopical Investigations on *Lawsonia inermis* Roots.

Basirian Mina [1], V.Ch.Jeevani [1], sivan Revathy [1], Chakravarthy Pramod [1], Rishi Ragav [1], *S.N.Manjula[1], K Mruthunjaya [2].

[1]*Department of pharmacology, J.S.S College of pharmacy, J.S.S University, Mysore-15, India.*

[2]*Department of pharmacognosy , J.S.S College of pharmacy , J.S.S University, Mysore -15, India.*

ABSTRACT

Lawsonia inermis (*inermis* Linn.), also known as henna, has been used in Ayurveda and unani system of medicine. In Cambodia, the roots are considered diuretic and they are given in gonorrhoea and in bronchitis .In the present investigation, phytochemical screening and microscopical studies were carried out. The correct identification of the microscopical characters is of great interest for quality control in basic research and drug production, especially for raw materials sold by traditional herbalists.

Keywords: *lawsonia inermis roots*, microscopical studies, micromorphological investigations.

INTRODUCTION

Lawsonia inermis. (*inermis* Linn.), also known as henna, has been used in Ayurveda and unani system of medicine. In Ayurveda the leaves are used as emetic, expectorant; in burning sensation; to cure leucoderma, diuretic; useful in headache, lumbago, bronchitis, boils, ulcers,

Author for correspondence: E-mail: onodi.basirian@gmail.com

stomatitis, syphilitic sores, amenorrhoea, scabies, and diseases of the spleen; enrich the blood; favours the growth of the hair.(Jiny Varghese et al 2010). The seeds are astringent to the bowels and anti -pyretic; cure insanity. The seeds are said to be tonic to the brain in unani. (Aggarwal et al-1959) The bark is given in jaundice and enlargement of the spleen, also in calculous affections; and as an alternative in leprosy and obstinate skin diseases; decoction is applied to burns. In Cambodia, the roots are considered diuretic and they are given in gonorrhoea and in bronchitis. (Gagandeep Chaudhary et al -2010). In the present investigation, phytochemical screening and microscopical studies were carried out on roots to correctly identify the characters of the drug for quality control.

Experimental: The roots of *lawsonia inermis* were purchased from the local market and authenticated by Dr. Naganandhini, department of pharmacognosy, Mysore. The roots were dried in shade and powdered. The dried roots powder was used for the study. The dried powdered plant material was extracted with ethanol using the standard Soxhlet extraction procedure. The extract was screened for different classes of phytoconstituents using specific standard reagents (Hatil Hashim et al -2009).The powdered root material was used for microscopical studies. Photographs were taken.

Phytochemical Screening: Qualitative chemical examination of the dried root powder of *lawsonia inermis* revealed the presence or absence of various plant constituents. The observations were recorded in + (present) or – (absent) (Table 1).

Microscopic studies- Anatomy of the root: The root consisted of cork . The cork was represented by a brown mass; Cork consists of the irregularly shaped, thin-walled, wax-coated, brown cells.Sclereids are a reduced form of scleremchyma cells with highly thickened, lignified walls. They are small bundles of sclerenchyma tissue; Sclereids are much elongated and flexible with tapered ends. Here they located at the periphery and occur as small groups of cells within parenchyma tissues. But compared with most fibres, sclereids are relatively short.

Table 1. Preliminary Phytochemical screening of *L.I*

Sl no	chemical tests	results
1	Tests for Sterols	+
	A) Salkowski test	+
	B)Liebermann-Burchard	
2	Tests for Triterpenes	+
	A) Salkowski test	+
	B)Liebermann-Burchard test	
3	Tests for Saponins	_
	A) Foam test	_
	B) Haemolysis test	
4	Tests for Alkaloids	_
	A) Wagner's test	_
	B) Mayer's test	_
	C) Dragendorff's test	_
	D) Hager's test	
5	Tests for Carbohydrates	
	A) Fehling's test	+
	B) Molisch's test	+
6	Tests for Tannins	+
	A) Ferric chloride test	+
	B) Gelatin test	+
	C) Vanillin-HCl test	+
	D) Match stick test	
7	Tests for Flavonoids	+
	A) Shinoda test	+
	B) Ferric chloride test	+
	C) Lead acetate test	+
	D) Zinc-HCl test	
	E) NaOH test	
8	Tests for Lactones	+
	A) Legal's test	+
	B)Baljet's test	

Present= + *Absent* = -

The most distinctive xylem cells are the long tracheary elements that transport water. Xylem with pittedthikining was found. Wood element performs a support function, enabling woody plants to grow large or to stand up for them. It also mediates the transfer of water and nutrients to the leaves and other growing tissues.

Fibers are elongate cells with tapering ends and very thick, heavily lignified cell walls. Fiber cells are dead at maturity and function as support tissue in plant stems and roots. The lumen or cavity inside mature, dead fiber cells is very small when viewed in cross section. Fibers are one of the components of sclerenchyma tissue, along with shorter, thick-walled sclereids

Figure A. Sclereids

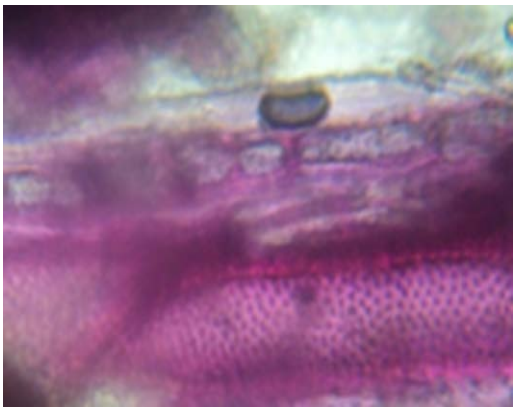

Figure B . Wood elements

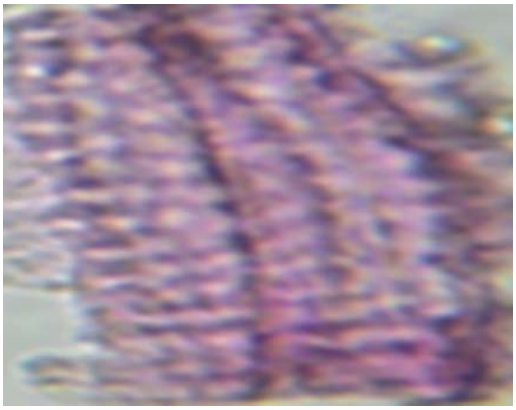

Figure C. Xylem vessels with pitted thickening

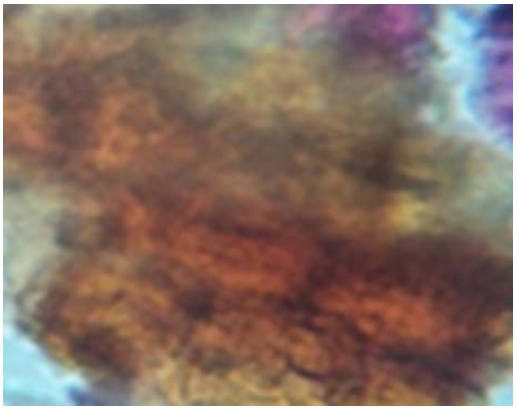

Figure D. Cork

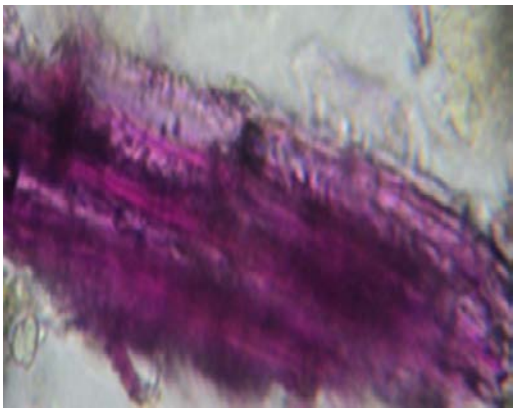

Figure E. Fiber

(stone cells) which produce the hard tissue of peach pits and the gritty texture in pears. Fibers are also associated with the xylem and phloem tissue of monocot and dicot stems and roots, but generally not in the wood of gymnosperms.

Powder microscopic characters: Crushed rind of the root was stained with, phloroglucinol and concentrated hydrochloric acid, showed the sclereids, wood elements and xylem cells (figure A, B, C). These cells were thick and the walls were lignified, cork cells were recognised by brown masses (figure D) followed by long and elongated fibers (figure E).

CONCLUSION

The morphological identification of *lawsonia inermis*, in powdered form, may be very difficult or even impossible by macroscopical observation alone. Microscopical investigation may contribute to the characterization of this medicinal plant .The features observed have, thus, given useful data for the characterization of *lawsonia inermis* and altogether help in the identification of commercial drug samples and of fragments in which the different macroscopical characters of the species are not generally distinguishable.

The present study therefore draws attention to the importance of correct identification of the microscopical characters of drugs for quality control in basic research and drug production, especially for raw materials sold by traditional herbalists.

REFERENCES

1. Aggarwal SR, Ghatak SN, Dhingra DR. Chemical examination of the seed oil of Lawsonia alba. Indian Oil Soap Journal. 1959; 25:145.
2. Gagandeep Chaudhary1, Sandeep Goyal, Priyanka Poonia. Lawsonia inermis Linnaeus: A Phytopharmacological Review. IJPSDR.2010; 2(2): 91-8.
3. Jiny Varghese , Silvipriya , Resmi , Jolly C. Lawsonia inermis (Henna): A Natural Dye of Various therapeutic Uses - A Review. Inventi Rapid: Cosmeceuticals. 2010; 1(1).

4. Hatil Hashim El-Kamali and Ehsan Musa Awad EL-Karim .Evaluation of Antibacterial Activity of Some Medicinal Plants Used in Sudanese Traditional Medicine for Treatment of Wound Infections. Academic Journal of Plant Sciences.2009; 2 (4): 246-51.