



PHARMACOGNOSTICAL AND PHARMACEUTICAL EVALUATION OF
ASHWATHA PHALA CHURNA

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ABSTRACT:

Infertility is defined as the failure to achieve a pregnancy within one year of regular (at least three times per month) unprotected intercourse. Oligozoospermia i.e. sperm count less than 15 million /ml is one of the causes for infertility. Now a day's oligozoospermia and infertility are common problems due to disturb daily routine, changed food habits and increased mental stress on account of fast life. *Ficus religiosa* Linn is a large evergreen tree found throughout India, wild as well as cultivated, having leathery, heart-shaped, long-tipped leaves. According to Ayurvedic system of medicine, *F. religiosa* (Peepal tree) is well known to be useful in Oligozoospermia and is also used in the Indian system of medicine for about 50 types of disorders including asthma, diabetes, diarrhoea, epilepsy, gastric problems, inflammatory disorders, infectious and sexual disorders. The present work is an attempt to compile an up-to-date and comprehensive review of *Ficus religiosa* that covers its ethno botanical and pharmacognostical data. Pharmacognostical evaluation of powdered fruit of *Ashvatha* showed presence of Epidermal cell, Stone cell, Mesocarp cell, oil globules, Simple starch grain, Prismatic crystals, Oil globule

Keywords: *Ashvatha Phala Churna*, Pharmacognosy, pharmaceutic, oligozoospermia

INTRODUCTION: As per the, Ayurvedic classics reproduction is the work of *Shukra Dhatu*. There are eight types of *Shukradusti* mentioned in the classics. A person having *Shukradusti* is unable to fulfill his *Chaturvidha Purusartha*. *Kshina Shukra* is one of the types of *Shukradusti*. *Kshina Shukra* is a *Vata Pittaja Vyadhi*¹ as an affection of *Shukradusti* manifested as a result of *Shukravaha Srotodushti*. Infertility is empirically defined as the inability of a couple even after 1 year of coital activity without contraception. In Vedic times it was used to make fire by friction. Considered a sacred tree, the Pipal is seldom cut. It is associated with the God Triad, the roots

being Brahma, the stem Vishnu and each leaf being the seat of a minor god. However it carries medicinal value and is use in treatment of diarrhoea, diabetes, urinary disorder, burns, haemorrhoids, gastrohelcosis, skin diseases, convulsion, tuberculosis, fever, paralysis, oxidative stress, bacterial infection etc. *Ashvattha* is such a type of easily available herb that can be found throughout India. Sushruta has mentioned its aphrodisiac effect² in men and has been indicated for *Pumsavana* to get the desired sex in the baby in *Atharva Veda*³. Here, *Pumsavana* does not mean only to get male child, rather it is related. Though a very cheap and easily available herb, till

date any attempt has not been done to its Pharmacognostical analysis and Physico-chemical parameters and hence this study has planned for pharmacognostical pharmaceutical analysis evaluation for Ashvatha Phala Churna.

MATERIAL AND METHODS: To fulfill the aims and objectives relevant Ayurveda and Modern literature, available information on internet etc. were searched.

Collection of the drug: *Ashwatha (Ficus religiosa) Phala* have been collected from the Pharmacy, G.A.U., Jamnagar.

Pharmacognostical Evaluation: As per API⁴ raw drugs were identified and authenticated by the Pharmacognosy Laboratory. The identification was carried out based on the organoleptic features and powder microscopy of the drug. Later, pharmacognostical evaluation of *Ashvattha (Ficus religiosa) Phala Churna* was carried out. *Churna* was dissolved in small quantity of distilled water, studied under the Carl Zeiss Trinocular microscope attached with camera, with stain and without stain. The microphotographs were also taken under the microscope.

Pharmacognostical Evaluation⁵: It is a large deciduous tree with a pale stem often appearing fluted on account of the numerous roots which has fused with the stem. Leaves leathery 4-8 inches long by 3-5 inches wide, somewhat egg shaped or rounded, tailed at the tip and heart shaped at the base, or sometimes rounded. The young leaves are frequently pink, change to copper and finally to green. Flowers minute within the receptacle. *Ficus religiosa* have Male, female and gall flowers enclosed in axillary, sessile, globose figs; ripening pink to black.

Figs ripens January onwards. Male flowers: sessile in a single ostiolar whorl or sometimes absent; sepals 2-3, free, ovate-lanceolate. Female and gall flowers: sessile or pedicellate; sepals 3-4 (-5), lanceolate. Figs depressed globose, c. 10-12.5 mm in diameter, dark-purple on maturity⁶. Figs in pairs, rounded, flat-topped green, to 1.5 cm across, axillary, sessile, smooth, ripening to purple with red dots.

Preparation of Ashwatha Phala Churna: *Ashwatha Phala Churna* was prepared in the Pharmacy, GAU, Jamnagar. By drying fruits of *Ashwatha* were dry under shade there after dried the fruits were powdered.

Physicochemical evaluation⁷:

Ashwattha Phala Powder was analyzed with appropriate protocols for standard physicochemical parameters such as water soluble extract, alcohol soluble extract, pH, hardness, uniformity of weight, total ash, acid insoluble ash, loss on drying as per CCRAS recommendations at the Pharmaceutical Chemistry laboratory, IPGT & RA.^{8,9,10}

HPTLC STUDY: High performance thin layer chromatography (HPTLC) is a sophisticated and automated form of TLC. H.P.T.L.C is quality assessment tool for the evaluation of botanical materials. It allows for the analysis of a broad number of compounds both efficiently and cost effectively. Additionally, numerous samples can be run in a single analysis thereby dramatically reducing analytical time. With HPTLC, the same analysis can be viewed using different wave-lengths of light thereby providing a more complete profile of the plant than is typically observed with more specific types of analyses.

The details of HPTLC done on alcoholic extract of Ashwattha Phala Churna are as follow:

Mobile phase:

Toluene: Ethyl acetate: Acetic acid (7:2:1) v/v.

Chromatographic conditions

Application mode :CamagLinomat V
Development Chamber :Camag Twin trough Chamber.

Plates :Precoated Silica Gel GF254 Plates.

Chamber Saturation : 30 min.

Development Time : 30 min.

Scanner :Camag Scanner III.

Detection : Deuterium lamp, Tungstan Lamp

Data System : Win cats software.

Methanolic extract of finished product was spotted on pre-coated silica gel GF 60254 aluminum plate by means of Camang Linomat V sample applicator fitted with a 100 µL Hamilton syringe. Toluene: Ethyl acetate: Acetic acid (7:2:1) was used as the

mobile phase. After development, densitometric scan was performed with a Camag TLC scanner III in reflectance absorbance mode at UV detection as 254 nm and 366 nm under the control of Win CATS Software (V 1.2.1. Camag) ¹¹.

OBSERVATION AND RESULT:

Pharmacognostical Evaluation:

Organolaptic Character:

Weight of each coarse powder was about 2 gm. , brownish in colour with sweet odour.

Microscopical Characters:

Diagnostic characters of powder under the microscope are epicarp cells of, **Mesocarp cells Prysmetic crystals, Tannin contents, wavy parenchyma, Stone cells ,Prismatic crystals, Starch grain with oil ,lignified palisade cell , Group of fibres ,fragment trichome ,Schleried** (Plate No. 1, 1-12)

♦ **Physicochemical parameters:**

The physico-chemical characters were evaluated as per standard procedures.

Table no.1: Observation of physico-chemical parameters of Ashwattha Phala Churna

Sr. No.	Parameters	Ashwattha Phala Churna
1.	Loss on drying 10 ⁰ C	3.27
2.	Total ash value	7.96 % w/w
3.	Water soluble extract	14.47% w/w
4.	Alcohol soluble extract	7.99% w/w
5.	pH	5.5

Data presented in table no.1 shows the values evolved from the physicochemical analysis of root and leaf of *Ashwattha Phala Churna*. Loss on drying value is 3.27% w/w, Total ash value 7.96% w/w. While water soluble extractive value is more than alcohol soluble extractive i.e. 14.47% w/w and 6.99% w/w, and pH is 5.5.

♦ **Qualitative analysis:**

The qualitative analysis of sample was done as per the standard procedures mentioned in API.

Table no. 2 Observation of qualitative analysis of methanolic extract of Ashwaththa Phala Churna

Sr. No	Qualitative analysis	Test	Ashwaththa Phala Churna
1.	Glycosides	Legal test	+
2.	Flavonoids	Lead acetate	+
3.	Alkaloids	Mayer's test Dragendroff test	+
4.	Tannin	-	+

Data revealed in table no.2 shows the preliminary qualitative analysis of methanolic extract of powder of *Ashwaththa Phala*. It shows the presence of steroid, glycosides and tannin , flavonoids and tannin.

HPTLC Results: (Plate No.a,b)

HPTLC Results of Ashwaththa Phala Churna showed that 2spots at 254nm and 4 spots at 366nm. Detailed results are depicted in the table No. 3

Table no.3 HPTLC profile of Ashwaththa Phala Churna observed under UV light

Sample	Solvent system	Under UV light		
			No of spots	Rf values
Ashwaththa Phala Churna	Toluene: Ethyl acetate: Acetic acid (7: 2: 1)	254 nm (Short UV)	2	0.09, 0.19
		366 nm (Long UV)	4	0.02, 0.07, 0.12,0.20,0.26

Data presented in table no. 2.2.3. shows the HPTLC of methanolic extract of Ashwaththa Phala Churna in Toluene: Ethyl acetate: Formic acid(7.5:2:0.5 v/v)solvent system. In this profile, 2 and 4 spots of Rf value were found at the wavelength of 254nm and 366nm.

DISCUSSION:Fruits are laxative and digestive. Fruit of Ashwaththa use as Garbhsthapana and Vajikarana It contains amino acids protein and tannin. The fruit is laxative, promotes digestion, aphrodisiac and checks vomiting. Ripe fruits are alexipharmic (an antidote or defensive remedy against poison, venom or infection).The powdered fruit is taken for

asthma. The fruit powder is also given to enhance fertility and used in dysentery, uterine troubles, ulcers, biliousness, bitter tonic, in blood diseases. Fresh fruit is also used to treat dehydration and prevent heart disease. Powdered dry fruit destroys sorrows of a person¹².

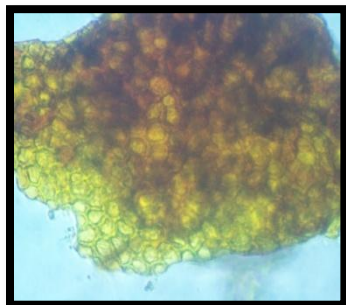
Pharmacognostical evaluation showed that the presence of the drug microscopic characters ie. epicarp cells of, Mesocarp cells Prismatic crystals, Tannin contents, wavy parenchyma, Stone cells ,Prismatic crystals, Starch grain with oil ,lignified palisade cell , Group of fibres ,fragment trichome ,Schleried This showed that the good quality of the product. The preliminary

physicochemical parameters were within the limits.

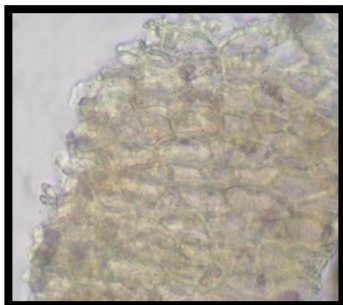
CONCLUSION: Preliminary organoleptic features and results of powder microscopy reveal presence of tannin contents, large amount of fibres, oil globules, prismatic crystal, etc. In preliminary physico-chemical analysis, water-soluble and alcohol-soluble extract, pH, and loss on drying were

assessed were within the standard range and HPTLC results of Ashwatha Phala Churna showed that 2 spots at 254nm and 4 spots at 366nm. As no published information is available on pharmacognostical and physico-chemical and pharmaceutical profile of Ashwatha Phala Churna, this preliminary information can be used for reference in future.

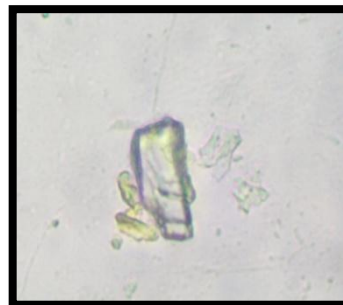
Plate -1: Micro photographs of powder microscopy of Ashvatha PhalaChurna (Plate: 1-12)



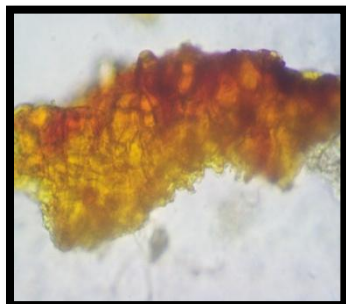
Epicarp cells
(Plate-1)



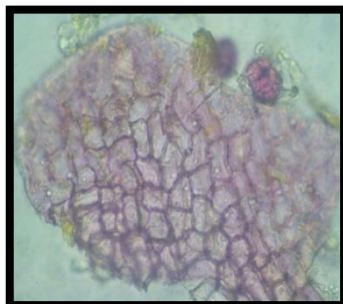
Mesocarp cells
(Plate-2)



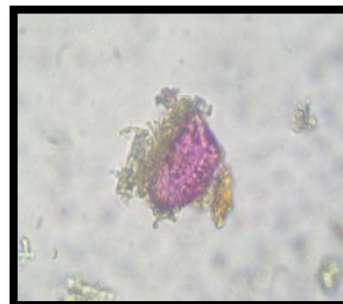
Prismatic crystals
(Plate-3)



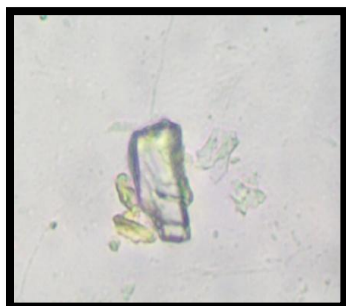
Tannin contents
(Plate-4)



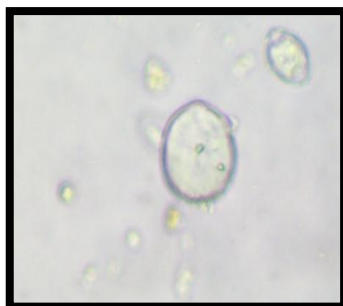
wavy parenchyma
(Plate-5)



Stone cells
(Plate-6)



Prismatic crystals

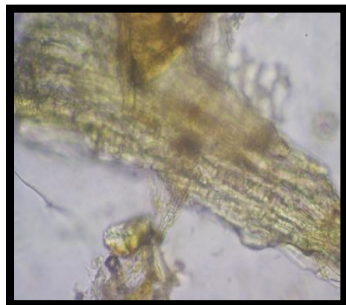


Starch grain with oil



lignified palisade cell

(Plate-7)



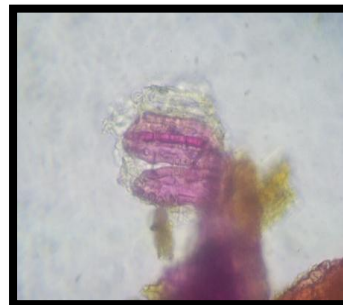
Group of fibres
(Plate-10)

(Plate-8)



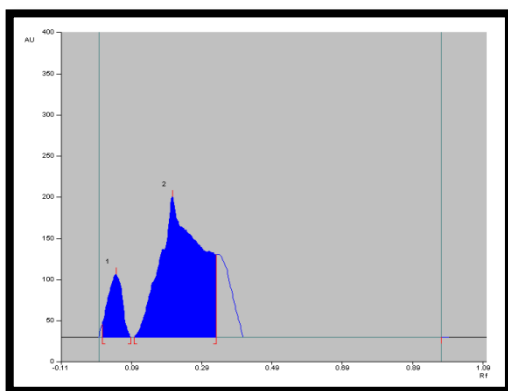
fragment trichome
(Plate-11)

(Plate-9)

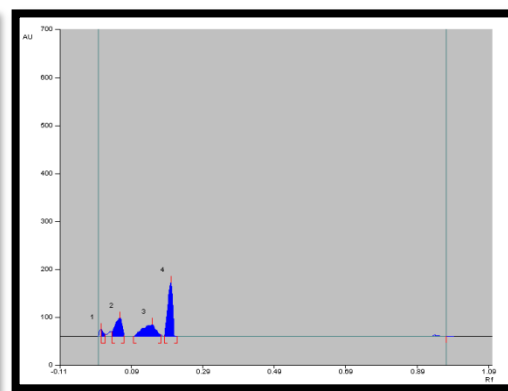


Schleried
(Plate-12)

Plate -2



(a)



(b)

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Source of support: Nil
Conflict of interest: None
Declared

Cite this Article as : [Varsakiya Jitendra et al :Pharmacognostical and Pharmaceutical Evaluation of Ahwathia Phala Churna]
www.ijaar.in : IJAAR VOLUME III ISSUE II MAY-JUNE 2017 PAGE No:338-344