International Journal of
Science Inventions Today
www.ijsit.com
ISSN 2319-5436
Research Article

PHARMACOGNOSTICAL AND PHYTOCHEMICAL STANDERDISATION OF PANCHAVALKALADI VARTI. - AN AYURVEDIC POLYHERBAL FORMULATION

Priti S.Verma[1], Harisha C.R[2], Shilpa B.Donga[3], Shukla V.J[4]

[1]MD Scholar S.R.P.T, [2]Head, Pharmacognocy, [3]Reader dept, S.R.P.T, [4]Head, Pharmaceutical Chemistry.
I.P.G.T&R.A. Jamnagar. Gujarat- 361008

ABSTRACT

UpaplutaYonivyapadis one of the 20 Yonivyapad, which is described by AcharyaCharaka, both Vagbhattas and Sarangadhara.In the present study, PanchavalkaladiVartiisselected for the local application. The present study was aimed at setting up a standard profile ofPanchavalkaladiVartiwhich was prepared using pharmacognostically authenticate draw drugs followed by subjecting it to detailed pharmacognostical, physicochemical and phytochemical (including Thin Layer Chromatography) analysis as per standard protocol. The observations were systematically recorded. Pharmacognostical findings (crystals, fibres, stone cells etc.) confirm the ingredients present in the finished product. Identified phytochemical components (Flavonoids, Alkaloids, Tannins compounds etc.) support the intended action of the formulation in vaginal discharge.

Keywords: UpaplutaYonivyapadPanchavalkaladiVartiPharmacognosy, phytochemistry, TLC

INTRODUCTION

UpaplutaYonivyapad is described by Acharya Charaka[1], both Vagbhattas[2, 3]and Sharangadhara[4].On the basis of the textual description, it seems that UpaplutaYonivyapad can be compared to Vulvovaginitis during pregnancy. UpaplutaYonivyapad is caused by vitiation of Vata&Kapha and it is characterised by yellowish or white mucoidvaginal discharge associated with pricking pain, itching etc. in vagina. If these infections are not treated, then they may spread to the choriodecidual tissue through the cervical canal resulting in the premature rupture of membrane, preterm labour[5], low birth weight, and pregnancy loss, spontaneous abortion and post abortion and post pregnancy infection[6,7,8,9,10] According to AcharyaVagbhatta, Tampon of oleaginous substances medicated with the decoction of Panchavalkala, Jambu, Dhava, Sallaki, andJjinginican be used in Upapluta Yonivyapad.[11] Most of the drugs of this *Varti*have *Kashaya Rasa, RukshaGuna and KaphaDoshaNashaka, Vranashodhana, Vranaropana, Vedanasthapana, ShothaharaDahaprashamana*properties. They have been reported to exert astringent, analgesic, anti-inflammatory, antimicrobial, antiprotozol and antifungal properties[12.] It is difficult to decide the dose of drug in *Pichu* form. Occasionally a Pichu (tampon) may be inadvertently forgotten for few days; a serious condition called 'Toxic Shock Syndrome' can develop due to this mistake[13.]

So VartiKalpana (Suppositories) was selected for the present study. It is convenient for patients to administer by own, needs no precaution or supervision. As in modern science vaginal suppositories are of fixed dose. To resemble that parameter vaginal suppository were prepared. It had disintegration time of less than 20 min. which provides a long lasting effect.

MATERIALS AND METHODS

Collection of Raw Drug:

Panchavalkal and jambu have being collected from the Pharmacy, I.P.G.T. & R.A., G.A.U., Jamnagar before preparation of drug, Dhava and Shallaki samples have being collected from the Una Pharmacy, Una. Jingini samples have being collected from the Sasoi, Jamnagar. Glycerine and Gelatine were purchased from outside (market). The ingredients and the part used are given in (Table no1).

No.	Drug	Botanical name	Ratio	Parts used
1	Vata	*Ficusbengalensis Linn*	1part	Stem bark
2	Udumber	*Ficusracemosa Linn.*	1part	Stem bark
3	Ashvatha	*FicusreligiosaLinn.*	1part	Stem bark
4	Plaksha	*FicuslacorBuch*	1part	Stem bark
5	Parisha	*ThespesiapopulneaLinn*	1part	Stem bark
6	Jambu	*Syzygiumcumini Linn*	1part	Stem bark
7	Sallaki	*BoswelliaserrataRoxb*	1part	Stem bark
8	Dhava	*Anogeissuslatifolia Wall*	1part	Stem bark
9	Jingini	*Odina woodierRoxb*	1part	Stem bark

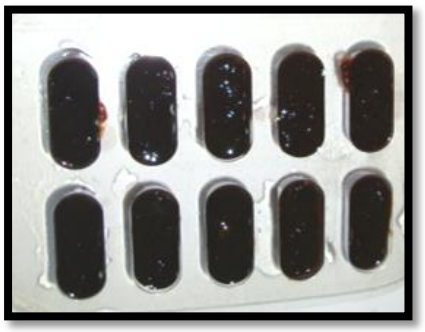
Table 1: Showing Contents of PanchavalkaladiVarti

Pharmacognostical Evaluation:

As per API[14] raw drugs were identified and authenticated by the Pharmacognosy department. The identification was carried out based on the morphological, organoleptic features and powder microscopy of the individual drugs. Later, pharmacognostical evaluation of *PanchavalkaladiChurna*was carried out. *Churna*dissolved in small quantity of distilled water, studied under the Carl zeiss binocular microscope attached with camera, with stain and without stain. The microphotographs were also taken under the microscope.

Preparation of PanchavalkaladiVarti:

PanchavalkaladiVarti.was prepared in the rasa shastradept I.P.G.T. & R.A GAU, Jamnagar.



PanchavalkaladiVarti

METHOD OF PREPARATION

Kwath of Panchavalkaladiwas taken,and then gelatin powder and preservative were added to the mixture.The solution was stirred for five minutes, Whole solution was melted in water bath, and glycerin was added then heat was constantly supplied and the solution was continuously stirred until a homogeneous mixture was obtained. Then it was poured into suitable chilled mold, after the drug settled, it was packed by aluminium foil.

Size: About 1.0 gm.

Shape: Oviform (oval) shape.

Storage: PanchavalkaladiVartishould be kept in well closed container and stored at refrigerator.

PanchavalkaladiVartishould be protected against the effects of heat, moisture, and dry air by keeping them in tightly closed containers in a cool place. Ingredients of PanchavalkaladiVarti (suppositories) for1 gm (suppositories) are given in (Table no. 2)

This Varti was analyzed using various standard physicochemical parameters such as, Loss on drying[16], PH[17], water soluble extract[18], and methanol soluble extract[19] as per API[14] at the pharmaceutical chemistry lab, IPGT & RA.

Qualitative tests [20]:

The presence of Alkaloids, Steroids, Glycosides, Flavonoids, Reducing sugar Carbohydrates, Volatiles oils and Tannins were confirmed through suitable tests.

S.No	Ingredients	for1 gm (suppositories)
1	*Kwatha* of *Panchavalkalad*i drug	1.66ml

2	Gelatine powder	0.5 gm
3	Glycerin	0.5 ml
4	Propyl Para Ben Sodium Salt	0.01gm

Table 2: Ingredients of PanchavalkaladiVartifor1gm (suppositories)

Thin layer Chromatography[21]:

Measured volume of the sample was evaporated to dryness, the residue was extracted with methanol by maceration and the sample for spotting was prepared.

T.L.C. study of the samples was carried out by using the following conditions:

Adsorbent layer - Silica gel G pre-coated plates (E-Merck)

Sample - Acid hydrolysis of Methanolic extract of PanchavalkaladiVarti.

Solvent system Toluene: Ethyl acetate: Acetic acid (8:3: 0.2) 1- Day

Detection 1-light and short and long wave UV radiation

2- Spraying with Ferric chloride.

Visualizations -

i) Under short wave Ultra Violet rays (254nm)

ii) Under long wave Ultra Violet rays (366nm) iii) Spray regent 5% ferric chloride

RESULTS AND DISCUSSION

Pharmacognostical study:

The initial purpose of the study was to confirm the authenticity of the drugs used in the preparation of*PanchavalkaladiVarti.* For that coarse powder of all the ingredients were subjected to organoleptic and microscopic evaluation separately. Results matched with the API and thus confirmed the genuineness of all the raw drugs. Later, after the preparation of the*Panchavalkaladichurna's*pharmacognostical evaluation was carried out.

Microscopic Characters of *Panchavalkaladichurna :*

Microscopic evaluation was conducted by dissolving the Panchavalkaladichurnain distilled water and studied under microscope with and without stain for the presence of the characteristics of the ingredient drugs and for the probable changes in features if any. The microphotographs were taken by using Carl Zeiss Trinocular microscope. Characteristics of all the ingredient drugs were identified in Panchavalkaladichurnaalso. Details are placed in Table 3. Organoleptic parameters of**PanchavalkaladiVarti** Sparsha – Consistency, Rasa – Taste,Rupa – Color, Gandha - Odor were studied and details are placed in

Table 4.

S.No	Drug	Botanical name	Microscopical Characters
1	Vata	Ficusbengalensis Linn	cork tissue stone cellsprismatic crystals of calcium oxalate Fig 1starch grains
2	Udumber	Ficusracemosa Linn.	SclereidsunlignifiedfibresCork cells prismatic crystals of calcium oxalate Fig 2
4	Parisha	ThespesiapopulneaLinn	cork tissuesingle rosette calcium oxalate crystal; Fig 5 starch grains,
5	Plaksha	FicuslacorBuch	parenchyma with simple pitsstone cells prismatic crystals of calcium oxalate Fig 6
6	Sallaki	BoswelliaserrataRoxb	cork cellsoleoresin contentsprismatic crystal stone cell Fig 7Accicular crystal Fig 8
7	Dhava	Anogeissuslatifolia Wall	cork cellsparenchymatous cells Lignified fibresFig 9 stone cell Fig 10Rosette crystalRound starch grains.
8	Jingini	Odina woodierRoxb	cork cells Fig 11Starch cellsrhomboidal Fig 12 prismatic crystalsstone cells parenchyma
9	Jambu	Syzygiumcumini Linn	stone cells Fig 13Crystal fibres Fig 14Lignified fibres Fig 15

Table 3: Powder microscopic results ofPanchavalkaladiVarti

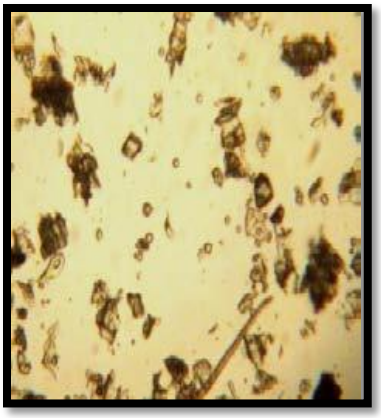


Fig 1Vata-Prismatic crystal

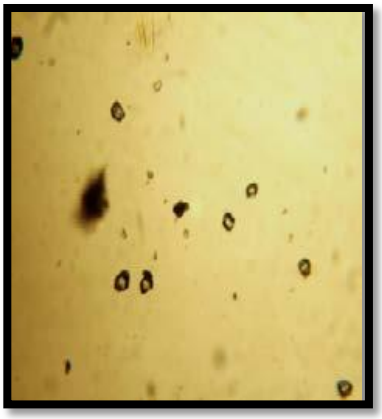


Fig 2 Udumbara-Prismatic crystal

Fig 3 Ashwattha-Crystal fibre

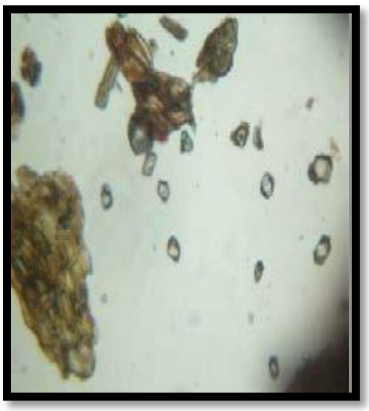


Fig 4 Ashwattha-Prismatic crystal

Fig 5 Parisha-Rosette crystal

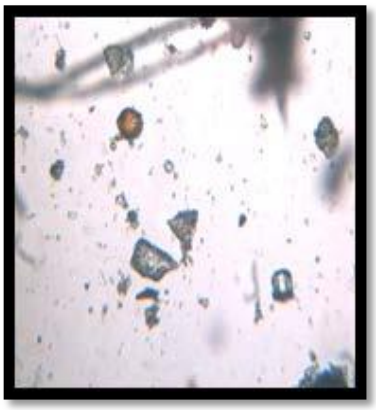


Fig 6 Plaksha–Prismatic crystal

Fig 7 SallakiStone cell

Fig 8SallakiAccicular crystal

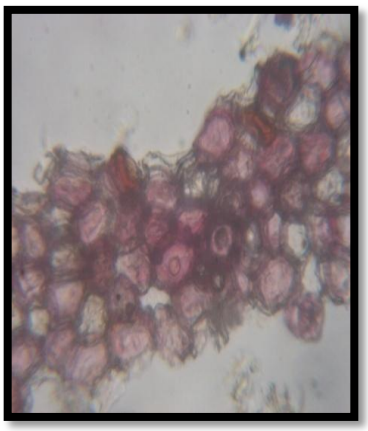


Fig 9 Dhava Lignified fibres

Fig10DhavaStone cell

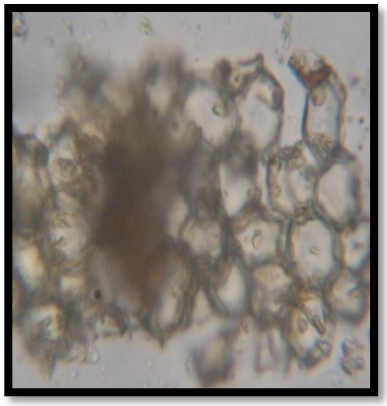


Fig 11JinginiCork cells

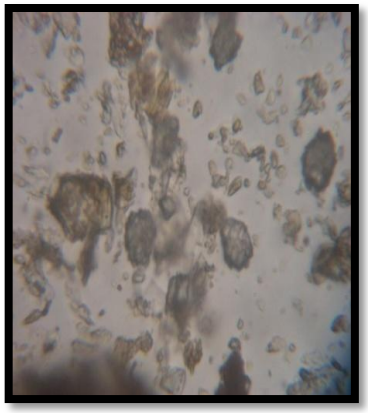


Fig 12JinginiClustar crystal

Fig 13 Jamboo Crystal fibre

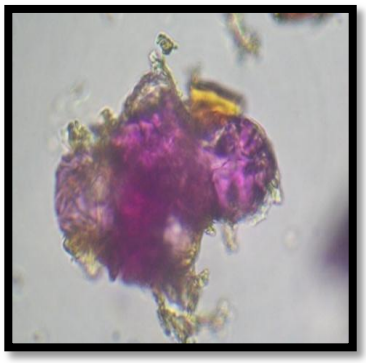


Fig 14 Jamboo Stone cells

Fig 15 Jamboo Lignified fibre

S.No	Parameters	PanchavalkaladiVarti
1	Colour	Redish Brown
2	Odour	Characteristic aromatic
3	Taste	Kashaya
4	Consistency	Hard

Table 4: Showing Organoleptic characteristics of PanchavalkaladiVarti

Physico-Chemical Parameters:

Physico-Chemical parameters of the*PanchavalkaladiVarti*like PH, Loss o drying, watersoluble extract, and methanol soluble extract were all found to be within the normal range. Details are shown at Table 5.

S.No.	Test	PanchavalkaladiVarti
1	Loss on drying	43.90
2	Water soluble extract.	50.097
3	Alcohol soluble extract	1.095
4	PH	5.0

Table 5: Physico –chemical parameters of*PanchavalkaladiVarti*

Qualitative test for various functional groups revealed the presence of tannins, alkaloids, flavanoids, saponin glycosides; steroids, reducing sugars, and Volatile oil are present in drug. Details are shown at Table 6.

S.No.	Component	Test	PanchavalkaldiVarti
1	Tannins	Ferric chloride	Positive
2	Alkaloid	Wagners	Positive
3	Flavanoids	Lead acetate	Positive
4	Saponin glycosides	Foam test	Positive
5	Steroids	Liebermann- Buchard	Positive
6	Reducing sugars	Fehlings	Positive
7	Carbohydrates	Molish's test	Negative
8	Volatiles oils		Positive

Table 6: Showing Qualitative test for various functional groupofPanchavalkaladiVarti

Thin layer Chromatography:

Densitometry scanning of the TLC pattern showed five spots corresponding to R_f values 0.14, 0.24, 0.43, 0.78 and 0.95 when the TLC plate was visualized at 366 nm UV light. Whereas four spots corresponding to R_f values 0.14, 0.43, 0.78 and 0.95 were obtained when the TLC plate was visualized at 254nm, UV light. After the spray of $FeCl_3$ solution 5 spots were obtained. Details are shown at Table 7.

Sample	Stationary phase	Mobile phase	Number of spot	Visuali-zation Is on366nm, Rf value	Visuali-zation is on 254nm, Rf value	After spray of $FeCl_3$ Number of spot	Visuali-zation Is on 366Nm
Acid hydro-lysis of Methanolic extract of Panchavalka-ladiVarti	Silica gel	Toluene: 8ml Ethyl acetate: 3ml Acetic acid 0.2 ml	1 2 3 4 5	0.14 0.24 0.43 0.78 0.95	0.14 0.43 0.78 0.95	1 2 3 4 5	0.12 0.21 0.68 0.78 0.95

Table 7: Showing Thin Layer Chromatographyof PanchavalkaladiVarti

DISCUSSIONS

In the present study a new pharmaceutical preparation of*PanchavalkaladiTaila*i.e. in the form of *Varti* was tried. Its pharmaceutical properties had to be studied; hence the formulation was subjected to minimum Pharmacognosticaland Pharmaceutical analysis. Pharmacognostical evaluation of*PanchavalkaladiChurna*showed the specific characters of*Ficusbengalensis,Ficusreligiosa,Syzygiumcumini,Anogeissuslatifolia*etc present in the preparation. Features found in microscopy such as cork tissue, stone cells prismatic crystals of calcium oxalate, starch grains, parenchyma with simple pits confirm the same. The results obtained by conducting the preliminary qualitative analysis revealed the presence of tannins saponinsglycosides, flavonoids and alkaloids. The quantitative pharmaceutical analysis was in normal range and in accordance with those mentioned in reference books. Tannins and Anthraquinones are known anti-oxidants and blood purifiers with anti-inflammatory actions. Tannins, wide variety of EOs are known to possess antimicrobial properties against the yeast Candida albicans and against phytopathogenic fungi species[22].

CONCLUSION

Pharmacognostical findings confirm the ingredients present in the finished product and there is no major change in the microscopic structure of the raw drugs during the pharmaceutical processes of preparation of *kwathachurna*. Identified phytochemical components Like Tannins, Anthraquinones,

Phytosterols all are Astringents and anti-inflammatory, thus prevent the prolongation of the initial phase and reduce the secretion of discharge, pain or tenderness, redness, swelling features of this stage, leading to progress, helps in quicker epithelialisation and normal condition of vulva and vagina. . It is inferred that the formulation meets minimum qualitative standards as prescribed by API at preliminary level. The results of this study may be used as the reference standard in further research undertakings of its kind.

REFERENCES

1. Charak, charakasamhita, ed. By SatyanarayanShastri , reprint , Varanasi: chaukhambhabharatiAcademy; 2003, C.Chi30/21-22
2. Vagbhata, AshtangaSamgraha,eds. KavirajAtrideva Gupta, Varanasi. ChaukambhaKrishnadasAcademy, 2005,A.S.utt.38/49
3. KavirajAtrideva Gupta A.S.Ut.38/32, AshtamgHridaya, ChaukhambaPrakashan, Varanasi A.H.Ut.33/48.
4. Dr. BramanandTripathi, DeepikaVyakhya, SharangdharaSamhita, ChaukhambaSurabharatiPrakashana, 2007, PoorvaKhanda 7/17
5. F.GaryCunningham,K.J.L,S.L.B.,J.C.H.,D.J.R.,C.Y.S., 2010 williams obstetricus23ed.by Gary Cunningham.USA.p 164
6. Fernado Arias,2008 High risk pregnancy and delivery ,Reed Elsevier India Private Limited,NewDelhi P.198
7. Hillier SL, Martius J, Krohn M, et al.A case -controlled study of chorioamniotic infection and histologic chorioamniotis in prematurity .N Engal J Med 1988; 319972 -
8. Dutta D.C. 2004, The text book of Obstetrics, New central book Agency (P) LTD, Kolkata.p.160
9. (www.cdc.gov/std/treatment/2006 on 20/2/2011 at 11.30 am)
10. Das Gupta 2008 Recent adv. In Obs .& Gyn.-8, Jaypee Brother Medical Publishers (P) Ltd, New Delhi p28-29
11. Vagbhatta, astangasamgraha 39/49,ed. By KavirajAtridevagupta, reprint,varansi: chaukhambhabharati academy; 2005 P 33
12. Sharma PC, Yelne MB, Dennis TJ. Database on Medicinal Plants used in Ayurveda, Vol.1, 3., 5,7and 8 Central Council for Research in Ayurveda & Siddha, New Delhi, 2001
13. (www.women2health.comon 25/1/2011 at 10.11 am).
14. Anonymous.TheAyurvedic Pharmacopeia of India, First Ed. Part-1, Vol.-5 NewDelhi, Ministry of Health & Family welfare. 2004.
15. Remington's Practice of Pharmacy ed by E.Fullerton Cook, P.D., PH.M. and Charles H.Lawall,Ph.M.,

Pharm.D., Sc.D.,F.R.S.A. printed in USA 1936*ref p 508

16. Anonymous, The Ayurvedic Pharmacopoeia of India, 1st Edition,Ministry of Health and Family Welfare, Govt. of India, Part I, Vol. I1999, Appendix - 2, Pg. 214 (2.2.9).
17. Anonymous, The Ayurvedic Pharmacopoeia of India, 1st Edition, Ministry of Health and Family Welfare, Govt. of India, Part I, Vol. I1999,Appendix - 3, Pg -230 (3.3).
18. Anonymous, The Ayurvedic Pharmacopoeia of India, 1st Edition,Ministry of Health and Family Welfare, Govt. of India, Part I, Vol. I1999, Appendix - 2, Pg - 214 (2.2.7).
19. Anonymous, The Ayurvedic Pharmacopoeia of India, 1st Edition, Ministry of Health and Family Welfare, Govt. of India, Part I, Vol. I1999, Appendix - 2, Pg -214 (2.2.6).
20. Baxi A.J.,ShuklaV.J.and Bhatt U.B. Methods of Qualitative testing of SomeAyurvedic Formulation, Gujarat Ayurveda University, Jamnagar June 2001
21. Kalasz, H.andBathori, M.Present status and future perspectives of thin layer chromatography. LC- GC Int, Vol.10, pp. 440-445.
22. R.G. Berger, flavour and fragrances chemistry, Bioprocessing ndsustainability,FBChemie,institutefurLebensmittelchemieWunstoreferstrab e14 30453, Hannover, germmany.Page N. 88,89.