Int J Ayu Pharm Chem

RESERACH ARTICLE

www.ijapc.com

e-ISSN 2350-0204

Pharmacognostical and Phytochemical Standardization of *Shatpushpadi Taila* - An Ayurvedic Polyherbal Formulation

Jatinder Kour[1]*, Shilpa B. Donga[2], Harisha C. R.[3] and Shukla V.J.[4]

[1,2]Dept. of S.R.P.T, IPGT & RA Gujarat Ayurved University, Jamnagar, Gujarat, India

[3,4]Dept.of Pharmacognosy, IPGT & RA Gujarat Ayurved University, Jamnagar, Gujarat, India

Abstract

Kashyapa has vividly described the effect of Shatapushpadi taila on Beejotsarga in the chapter *Shatapushpa-Shatavari Kalapadhyaya*. It is used in the management of *Vandhyatva (anovulation) and helps in "Rutupravartana"* which indicates both *Artavajanana* and *Beejotsarga*.[1]The present work was carried out to standardize the finished product *Shatpushpadi taila* to confirm its identity, quality and purity. There has been an increase in demand for the Phyto-pharmaceutical products of *Ayurveda* so a new pharmaceutical preparation in the form of *Shatpushpadi taila* was tried to standardize which is economical in terms of time and machinery usage. Pharmacognostical and phyto-chemical observations revealed the specific characters of all active constituents used in the preparation. The presence of oil globules, starch with prismatic crystals, cork cells, were the characteristic features observed in the microscopy of drug combination. Refractive index *of Shatpushpadi taila* was found 1.4860., specific gravity 0.9104, iodine value 101.97, saponification value 220.85 and acid value is 3.28.

Keywords

Anovulation, Pharmacognosy, Phyto-chemistry, Shatpushpadi taila

Greentree Group

Received 01/06/16 Accepted 25/06/16 Published 10/07/16

INTRODUCTION

According to Acharya Sushruta, four essential factors are required for healthy conception, which are proper fertile period, physiologically adequate and healthy internal organs of reproduction, the proper nourishment - to the developing zygote or fetus, the activated ovum and spermatozoa. . Among them Beeja is the core stone of the female reproductive process and in its absence conception cannot achieve despite of all the other factors. Here the Beeja is taken as Antahpushpa i.e. ovum. So anovulation can be included under Beeja Dushti.

Now a day, Infertility is a problem of global proportion, affecting on an average 8-12% of couples worldwide. The incidence of infertility is increasing by changed life style in urban India i.e. irregular working hours, late marriage, sedentary lifestyle, professional and social stress on young couples, genetic disorder.

Female-factor infertility is most commonly caused by lack of ovulation (e.g., the development and release of eggs from the ovary anovulation.2 So there is a ray of hope for women to achieve ovulation which give her motherhood through the Ayurvedic treatment.

In modern science there are treatments like Clomiphene Citrate, IVF, GIFT, ET etc. available for ovulation induction but all have unsatisfactory results, enormous expenses, lots of side effects and complications.[2] So there is a great scope of research to find out safe, potent, less costly and effective remedies from Ayurveda for the management of Vandhyatva. So here an effort in this direction has been put by this research work. So taking all these points into consideration, in this

present study we take Shatapushpadi Taila in Nasya and Basti form.

Kashyapa has vividly described the effect of Shatapushpa on Beejotsarga in the chapter Shatapushpa-Shatavari Kalapadhyaya. The rasa and virya of the Shatapushpa described by the Kashyapa is Madhura and Ushana respectively. But in Dravya Guna Vignana the rasa of Shatapushpa is Katu, Tikta and Veerya is Ushna.3The action of Shatapushpa is Balya, Brihaniya, Deepana, Pachana, Yonivishodhana, Rutupravartana etc. as described by Kashyapa. Here, "Rutupravartana" indicates both Artavajanana and Beejotsarga. So, to prove these both actions of the Shatapushpa, it has been taken for present study.

MATERIALS AND METHODS

Collection, Identification and authentication of raw drugs:

The raw drugs for the study were procured form the Pharmacy of Gujarat Ayurved University, Jamnagar. The ingredients were identified and authenticated in the Pharmacognosy Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar**. [Table 1]**

TABLE 1 Ingredients of *Shatpushpadi Taila*[1]

S. No	*Ingredients*	*Latin Name*	*Part Used*	Amount
1.	*Shatapushpa*	*Anethum sowa* Kurz	*Beeja*	28kg
2.	*Guduchi*	*Tinospora cordifolia* (Willd.)Miers.	*Kanda*	140gms
3.	*Gokshura*	*Tribulus terrestris* Linn.	*Beeja*	140gms
4.	*Guggul*	*Comiphora mukul* Hook ex. Stocks	*Niryas*	140gms
5.	*Karpura*	*Cinnamom camphora* Nees & Eberm	*Niryas*	140gms

6.	*Vacha*	*Acarus calamus* Linn.	*Rhizome*	140gms
7.	*Madhuyashti*	*Glycyrrhiza glabra* Linn.	*Mool*	140gms
8.	*Daruharidra*	*Berberis aristata* DC.	*Rhizome*	140gms
9.	*Manjistha*	*Rubia cordifolia* Linn.	*Mool*	140gms
10.	*Lavang pushpa*	*Syzygium aromaticum* Linn.	*Pushpa*	140gms
11.	*Sariva*	*Hemidesmus indicus* R. Br.	*Mool*	140gms
12.	*Bala*	*Sida cordifolia* Linn.	*Mool*	140gms
13.	*Bilva*	*Aegle marmelos* Corr.	*Mool*	140gms
14.	*Gambhari*	*Gmelina arborea* Linn.	*Mool*	140gms
15.	*Patala*	*Stereospermum suaveolens* DC.	*Mool*	140gms
16.	*Brihati*	*Solanum indicum* Linn.	*Panchang*	140gms
17.	*Kantakari*	*Solanum xanthocarpum* Schrad & Wendl	*Mool*	140gms
18.	*Shalaparni*	*Desmodium gangeticum* DC.	*Mool*	140gms
19.	*Vasa*	*Adhatoda vasica Nees.*	*Patra*	140gms
20.	*Rasna*	*Pluchea lanceolata* C. B. Clarke	*Mool*	140gms
21.	*Khushtha*	*Saussurea lappa* C.B. Clarke	*Mool*	140gms
22.	*Laghu Ella*	*Lesser cardamom* Maton	*Seeds*	140gms
23.	*Shatavari*	*Asparagus recemosus* Willd	*Mool*	140gms
24.	*Trivrita(shyama)*	*Ipomoea turpenth* Silva Manso	*Mool*	140gms
25.	*Khadira*	*Acacia catechu* Wild.	*Saar*	140gms
26.	*Twak*	*Cinnamomum zeylanica* Blume	*Twak*	140gms
27.	*Draksha*	*Vitis vinifera* Linn.	Dried fruit	140gms
28.	*Haridra*	*Curcuma longa* Linn.	Rhizome with root	140gms
29.	*Ushira*	*Vetieveria zizanioides* Linn.	*Mool*	140gms
30.	*Shankhapushpi*	*Convolvulus pluricaulis* Choisy	*Panchang*	140gms
31.	*Chandana*	*Santalum album Linn.*	*Twak*	140gms
32.	*Haritaki*	*Terminalia chebula* Retz.	*Phal*	140gms
33.	*Bhibhitaki*	*Terminalia bellirica* Roxb.	*Phalmajja*	140gms
34.	*Amalaki*	*Emblica officinalis* Gaertn.	*Phal*	140gms
35.	*Ashwagandha*	*Withania somnifera* Dunal.	*Mool*	140gms
36.	*Katphala*	*Artocarpus intagrefolia* Linn.	*Phal, Twak, Patra*	140gms
37.	*Punarnava*	*Boerhavia diffusa* Linn.	*Mool*	140gms
38.	*Katuki*	*Picrorhiza kurroa* Royle ex	Rhizome with root	140gms

		Benth		
39.	*Vidharikanda*	*Pueraria tuberose* DC.	Rhizome	140gms
40.	*Agnimantha*	*Premna muceronata* Roxb.	*Patra, Mool*	140gms
41.	*Kapittha*	*Feronia elephantum*	*Phal Majja*	140gms
42.	*Gunja*	*Abrus precatorius* Linn.	*Beeja, Moola*	140gms
43.	*Kullatha*	*Dolichos biflorus* Linn.	*Beeja*	140gms
44.	*Yava*	*Hordeum vulgare* Linn	*Beeja*	140gms
45.	*Agaru*	*Acularia agallocha* Roxb.	*Kandasaar*	140gms
46.	*Akshota*	*Juglans regia* Linn	*Phal Majja*	140gms
47.	*Indravaruni*	*Citrullus colocynthis* Schrad	*Moola*	140gms
48.	*Saindhav lavana*	*Rock salt*	-	140gms
49.	*Meda & Mahameda = Ashwandha*	*Withania somnifera* Dunal.	*Mool*	140gms
50.	*Kakoli & Ksheerakakoli = Shatavari*	*Asparagus recemosus* Willd	*Mool*	140gms
51.	*Jivaka= Vidari*	*Puperia tuberose*	*Kanda*	140gms
52.	*Tila taila*			21 kgs.
53.	*Go dugdha*			30 lit.

METHOD OF PREPARATION

Preparation of *Shatapushpadi Taila:*

DRUG PREPARATION:-

- *Tila Taila*:- 21 kgs.
- *Go-dugdha*:- 30 liters
- *Kalka:- Shatapushpa* 4kg
  Rest each Dravya 40gms.
- *Kwatha*:- *Shatapushpa* 24kg
  Rest each *Dravya* 100gms.
- 12 times of water reduced to one fourth.

Preparation of Taila:-

- *Shatapushpa* in amount of 24kg and rest all drugs in amount of 140gms each and 61 litres. of water will be used for *Kwatha preparation.* 16 litres of *Kwatha will prepare* for *Taila paka.*
- Same ingredients will used for *Kalka* preparation in the amount of 5kg.
- *Kwatha, Kalka, Taila and Dugdha* will be mixed together for *Snehapaka.*

All examinations for *Snehapaka* will be done.

Pharmacognostical evaluation of ingredients of *Shatpushpadi Taila*-

Organoleptic study:

Indiviual powders were subjected for various sensory characters like colour,taste,odour ,and were carefully noted.**[Table 2].**

Table 2 Organoleptic properties of *Shatpushpadi taila*

Rupa (Colour)	Light brown
Rasa (Taste)	Sweetish, Astringent
Gandha (Odour)	Characteristic
Sparsha (Consistency on Touch)	Liquid ,sticky

Powder microscopy:

The powders of respective parts taken in glass slide covered with cover slip and observed under the Carl Zeiss microscope with stain (Phloroglucinol and Conc. HCl) and without stain, to study the characters. The microphotographs were taken by using Carl Zeiss binocular attached with camera.**[Fig 1. plate 1-41]**

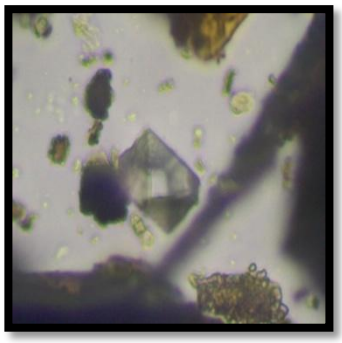
Physico chemical study:

Shatpushpadi taila was analyzed by using qualitative and quantitative parameters at Pharmaceutical Chemistry Laboratory, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar. All Physico-chemical parameters such as acid value,saponification value,iodine value,refractive index, Specific gravity were determined **[Table 3].**

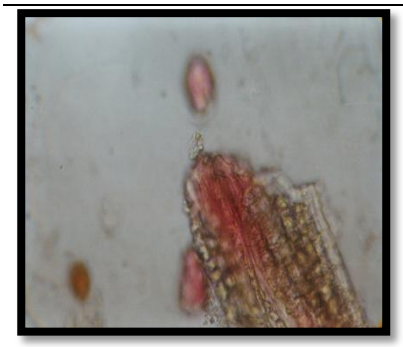
S. No	Test	Sample Result
1	Acid value	3.28
2	Refractive index	1.480
3	Specification value	220.85
4	Iodine value	101.97
5	Specific Gravity	0.9104

Table 3 Physico-chemical parameters of *Shatpushpadi taila*-

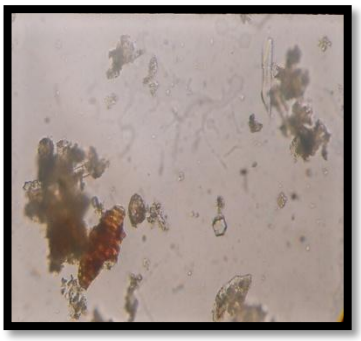
Plate 1 Microphotographs of finished products of *Shatpushpadi taila*[4-12]



1.Prismatic crystals of Agru

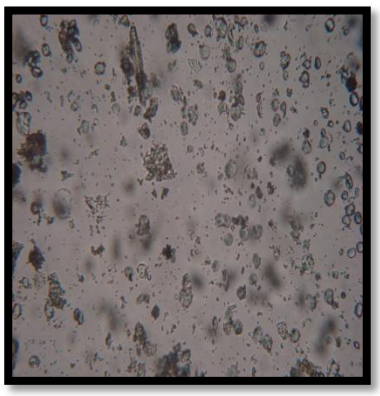


2. Stone cells of agnimanth.



3.Prismatic crystals of akshota

4. Sclerides of amalaki



5.Starch grains of ashwaghandha

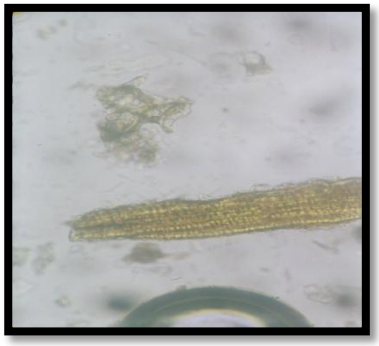
6.Stellate trichomes of bala

7-Stone cells of vibhitak

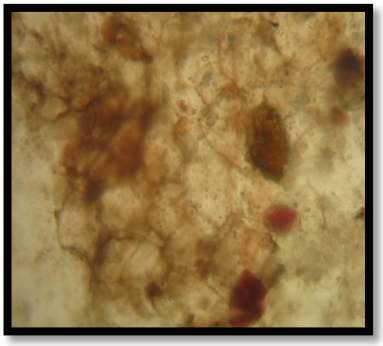
8-Fibres in bilwa

9-Simple trichome of brihati

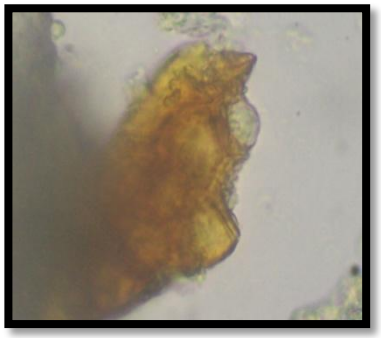
10.Lignified fibres of chandan



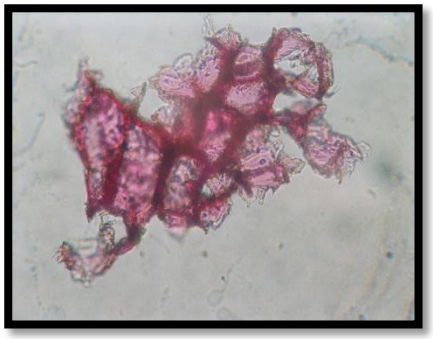
11. Fibres of daruhridra



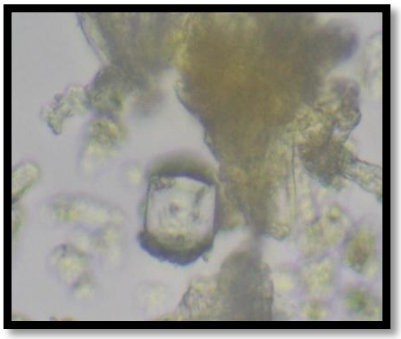
12.Lignified parenchymal cells of draksha



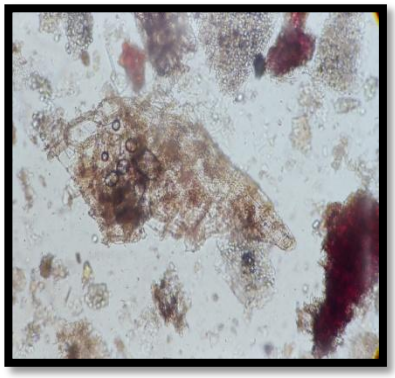
13. Tannin content of ela



14.Lignified cork of gambhari

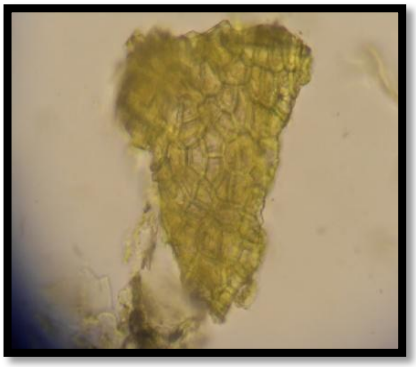


15. Crystals in gokshru



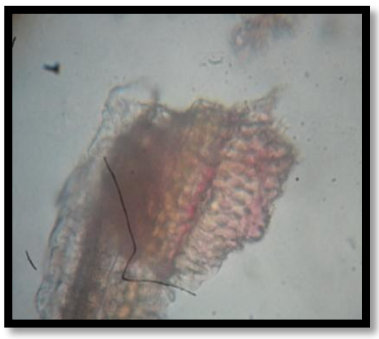
16.Cork cells of guduchi

17.Annular vessels in gunja



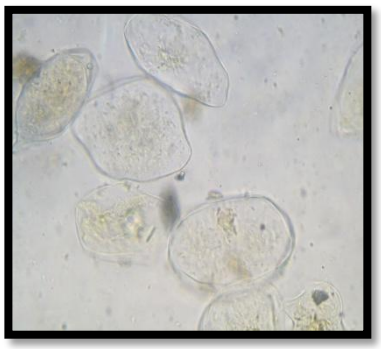
18. Epicarp cells of haritaki

19. Septate fibres of indarvaruni



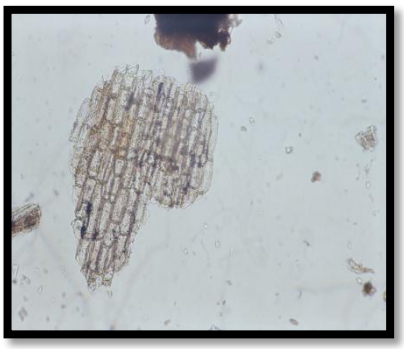
20.Border pitted vessels of khadhir

21.Multi branch trichome fibres of kantakari

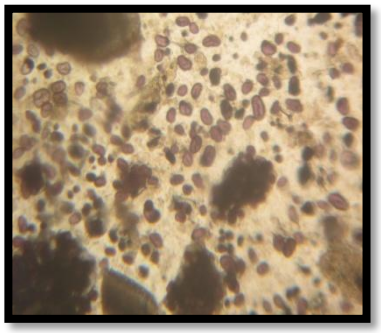


22.Mesocarp cells of kapitha

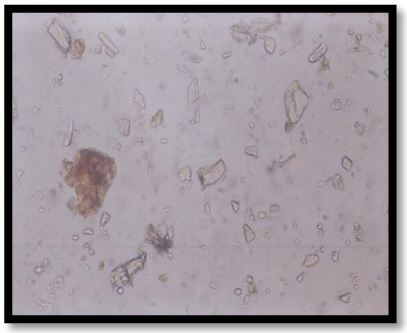
23. Stone cells of katphala



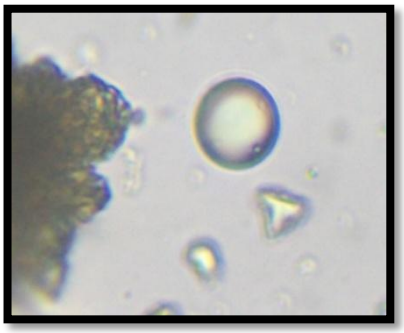
24. Cork cells of katuki



25.Starch(iodine)of kulatha



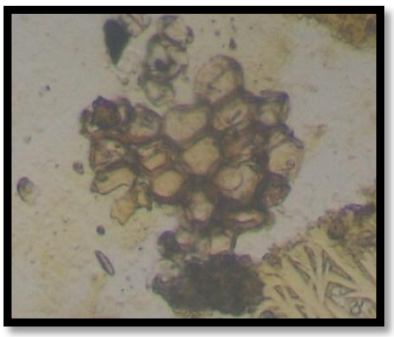
26.Oleoresin with crystals of kustha



27. Oil globule of lavang

28.Acicular crystal in manjistha

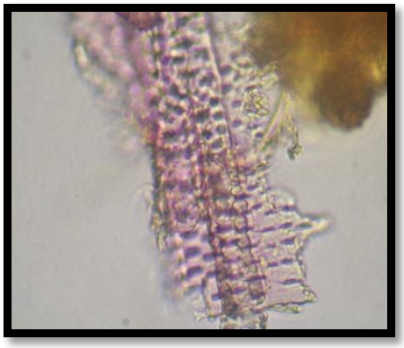
29. Tannin with crystal of patla



30. Cork of punarnava

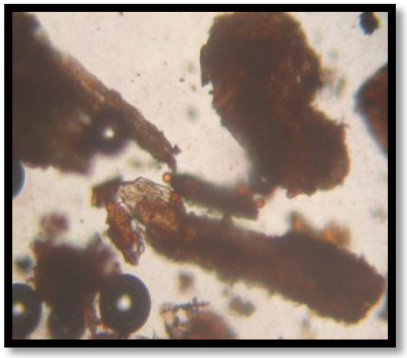
31.Starch with hilum of rasna

32.Lignified parenchymal cells of salparni



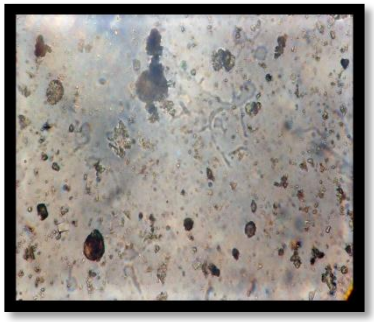
33. Pitted vessels of sariva

34.lignified stellate trichome of shankhpushpi



35. oil globules of shatpushpa

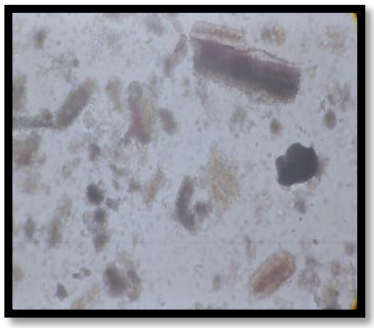
36. simple fibres of shatavari



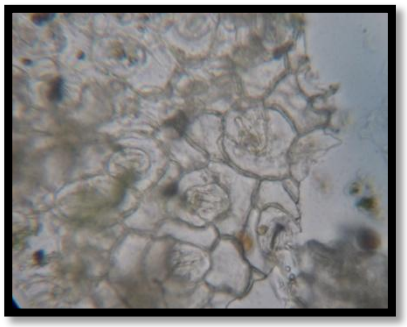
37.Roseete crystals and starch grains in trivrit

38. oil glands in twak

39.unicellular trichome of Usher

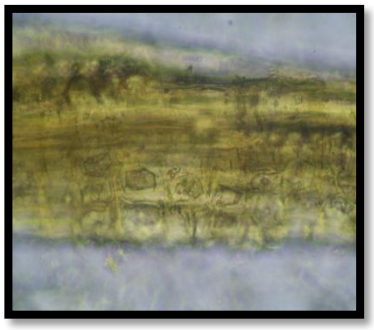


40.Oleoresin content of vacha



41. Diacytic stomata of vasa

42.Prismatic crystal of Vidhari



43.crystal fibre of yasthimadhu

44.unicellular trichomes of Yava

High performance thin layer chromatography (HPTLC):

Methanol extract of *Shatpushpadi taila* was used for High performance thin layer chromatography (HPTLC) study. Methanol

extract of *Shatpushpadi taila* was spotted on pre-coated silica gel GL60254 aluminum plate as 10mm bands by means of a Camag Linomate V sample applicator fitted with a 100 µL Hamilton syringe. Toluene: Ethyl acetate: Acetic acid (7:2:1) was used for *Shatpushpadi taila* as a mobile phase. The development time was 30 minutes. After development, Densitometry scanning was performed with a Camag TLC scanner III in reflectance absorbance mode at 254 nm and 366 nm under control of Win CATS software (V1.2.1. Camag).12, 13 Then the plate was sprayed with Vanillin sulphuric acid followed by heating and then visualized in day light[13].

RESULTS AND DISCUSSION

Pharmacognostical evaluation:

Organoleptic parameters:

The colour of shatpushpadi taila is light brown,whereas the taste of the shatpushpadi taila is sweetish and astringent.the odour is characteristic and consistency on touch is liduid,sticky.These are all the organoleptic parameters of the shatpushpadi taila as mentioned in Table 2.

All Physico-chemical parameters of shatpushpadi taila are acid value is 3.28, saponification value is 1.480, iodine value is 101.97,refractive index is 1.480, Specific gravityis 0.9104.

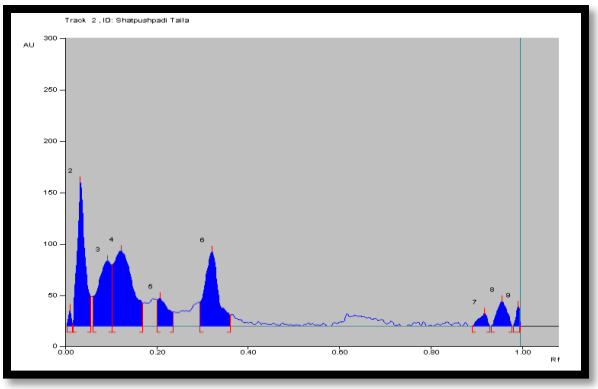
HIGH PERFORMANCE THIN LAYER HROMATOGRAPHY[10]

On analyzing under demonstrater at 254 nm,the chromatogram showed 9 peaks while at 366nm chromatogram showed 3 peaks and after spray the chromatogram showed 3 peaks[Table 4 and Fig 2 and Fig 4(a-c)].Three dimensional densitogram (3D) at 254 and 366nm shows comparative Rf value of sample with standard[Fig 3(a-c)]

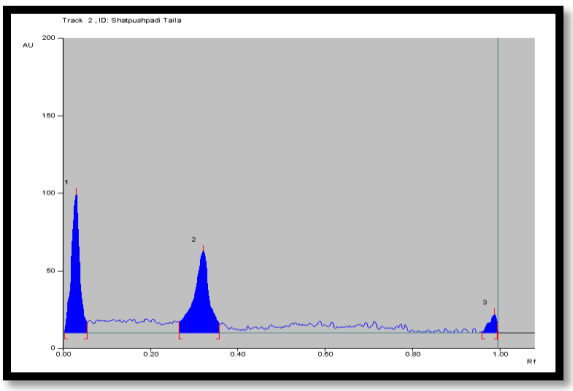
Table 4 The findings of HPTLC at 366nm and 254nm UV light *shatpushpadi taila*(Methanol Extract)

Wavelength	No. of Spots	R_f value
254 nm	09	0.01,0.03,0.09,0.12,0.21,0.32,0.92,0.96,0.9
366nm	03	0.03,0.32,0.99
Vaniline sulphuric acid (after spray)	03	0.27, 0.14, 0.17

Fig 2 Densitogram of *Shatpushpadi Taila* at 254 and 366nm

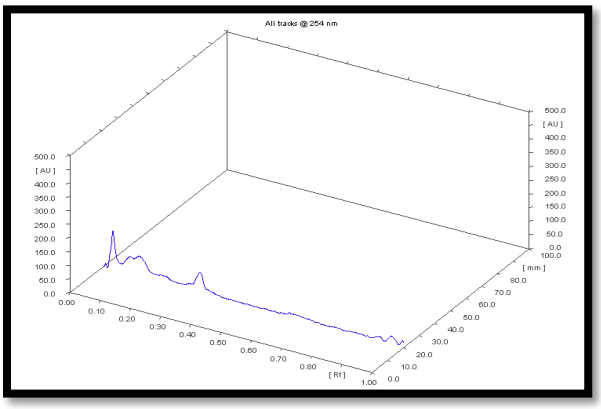


(a)Densitometry at 254nm

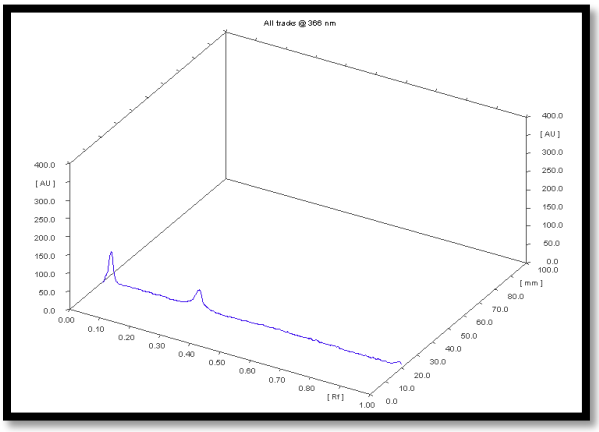


(b)Densitometry at 366 nm

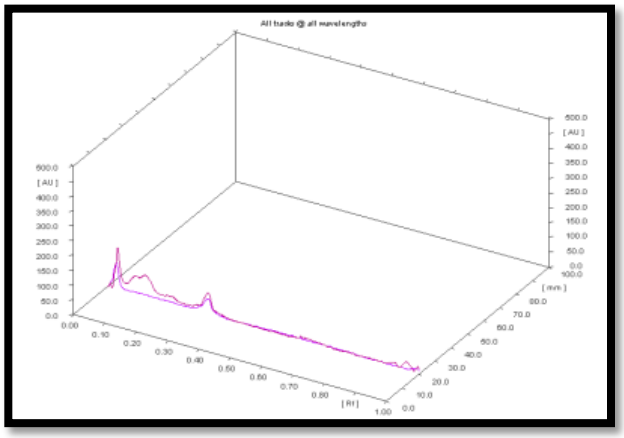
Fig 3 (a-c) Three dimensional (3D) Densitogram at (a) 254nm (b) 366nm (c) specific comparater graph



(a)254nm

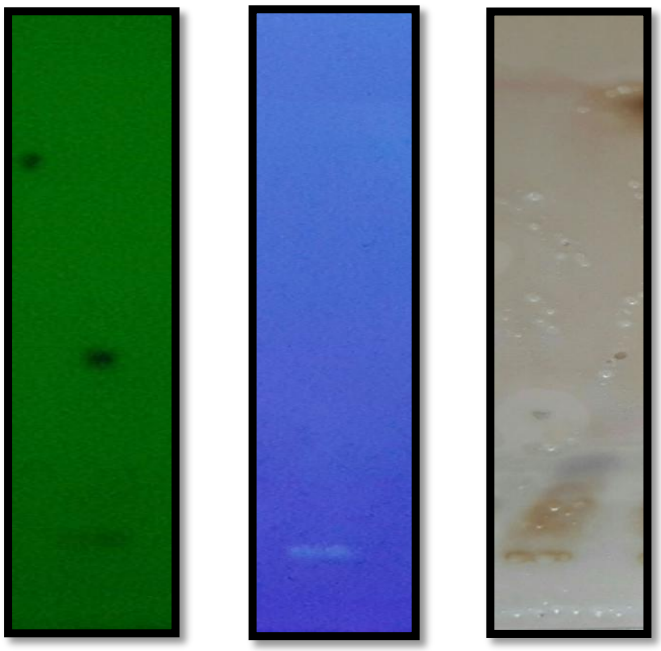


(b)366nm



(c)Comparator

Fig 4 HPTLC finger prints at (a)254nm (b)366nm (c) after spray



a. 254nm b. 266 c. after spray

DISCUSSION

Pharmacognostical evaluation showed that the shatpushpadi taila contains all the ingredients which were observed in the microscopical characters, this shows that the

purity and quality of the product. Phytochemical analysis showed that material gains no moisture during storage,so quality of the product is not affected. The obtained values of these tests were found within normal limits which indicate good quality of product. All Physico-chemical parameters of shatpushpadi taila are acid value is 3.28,,saponification value is 1.480,,iodine value is 101.97,refractive index is 1.480, Specific gravityis 0.9104.All tests are normal in limit and shows the product is of good quality and better results in the diseases. HPTLC results showed that the 9 spots at 254 nm and 3 spots at 366 nm.

CONCLUSION

Pharmaogonostical and phytochemical evaluation of shatpushpadi taila illustrated the specific characters of all ingredients which are used in the preparation.the oleoresin ,pitted vessels,prismatic crystal,calcium oxalate crystals are observed in the ingredients. All the physic chemical parameters like acid value, saponification value, iodine value, refractive index, specific gravity analysed were with in the normal range. all the results showed the quality of the preparation is standard .further studies may be carried out on it. On the basis of observations made and results of experimental studies, this study may be beneficial for future researchers and can be used as a reference standard in the further quality control researches

ACKNOWLEDGEMENTS-The authors would like to acknowledge Profp.k prajapatil, Director, IPGT & RA, GAU, Jamnagar for guidance and support, also to the staff of Pharmaceutical laboratory and pharmacogonosy laoboratory for their guidance and support

REFERENCES

1. Vriddha Jivaka, Kashyapa Samhita or (Vriddha Jivakiyam Tantram), Pandit Hemaraja Sharma, the Vidyotini hindi commentary, Chaukhamba Samskrit Samsthan, Varanasi 6th edition, 1998, Ka.Kalpa *Shapushpashatavri kalpadhyaya*.-5-6, page, 185-186

2. Inhorn MC Global infertility and globalization of new reproductive technologies: liiustrations from Egypt Sco Sci Med 2003;56;1837-51.

3. Dravya guna vigyana, Acharya Priyavat Sharma volume 2, 5th chapter drug no 165 Chaukhamba Bharati academy Varanasi Reprint 2009, 403pp .

4. Database of Medicinal Plants used in Ayurveda CCRAS, Dept of ISM&H; Ministry of Health and FW; Govt of India, 2002; Vol-II, 153 pp.

5. The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition , part 1, Vol-1,40 pp. ,part-1,Vol-1, 43 pp , part - 1,Vol-1, 80 pp, part -1,Vol-1, 20 pp, part-1,vol-1, 76 pp, part-1,vol-1, 101 pp, part-1,vol-1, 70 pp. part-1,vol-1, 113 pp, part-1,vol-1, 95 pp.

6. The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition part 1, Vol-II, 168 pp.

7. The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition part 1 vol-3, 115-117 pp, part-1,vol-3, 53-59 pp part-1,vol-3, 178-180 pp, part-1,vol-3, 162-164 pp, part-1,vol-3, 213-214 pp, part-1,vol-3, 45-46 pp, part-1,vol-3, 219-220 pp, part-1,vol-3, 207-208 pp, part-1,vol-3, 92-93 pp, part-1,vol-3, 65-66 pp, part-1,vol-3, 92-93 pp.

8. The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition part 1 vol-5, 12-13 pp, part-1,vol-5, 87-88 pp, part-1,vol-5, 146-148 pp. part-1,vol-5, 4-5 pp.

9. The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition part 1 Vol-6, 56pp, part-1,vol-6,204 pp, part-1,Vol-6, 32 pp, part-1,vol-6, 26 pp, part-1,vol-6, 111 pp

10.The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition part 1 part-1,vol-8,173-182 pp, part-1,vol-8,

114-124 pp, part-1,vol-8, 161-170 pp, part-1,vol-8, 144-149 pp, part-1,vol-8, 71-86 pp part-1,vol-8, 89-98 pp, part-1,vol-8, 40-49 pp,part-1,vol-8, 1-10 pp, part-1,vol-8, 23-37 pp.

11. Database of Medicinal Plants used in Ayurveda CCRAS, Dept of ISM&H; Ministry of Health and FW; Govt of India, 2002, Vol-II, 212-218 pp

12. The Ayurvedic Pharmacopeia of India, Delhi: Ministry of health & Family welfare department of Ayush; 2011,first edition part-1,vol-3, 1-2 pp, part-1,vol-1, 44 pp,part-1,vol-1, 75pp.

13.Anonymous, 1999, Planner Chromatography, Modern Thin layer Chromatography, Switzerland,pg 2-16.