

PHARMACOGNOSTICAL AND PHARMACEUTICAL EVALUATION OF PHALAGHRITA - A COMPOUND AYURVEDIC FORMULATION

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ABSTRACT

Infertility is a burning problem of present era. In our classics mentioned a lots of preparations which is used in Infertility. *Ayurvedic* literature speaks about the importance of the drug "*Nothing in the world exists, which does not have therapeutic utility*". W.H.O. has given a more comprehensive definition as "Drug is any substance or product that is used or intended to be used to modify or explore physiological systems or pathological status for the benefit of the recipient". The importance of drug is very well known in all *Ayurvedic* classics and it has been highlighted by *Acharya Charaka* in *Chikitsa*

Chatushpada. *Chatushpada* is required for the successful treatment of the disease. **PHALAGHRITA** is also a popular preparation which is used in different fields of infertility. Many *Ayurvedic* classics mentioned effectiveness of *Phalaghrita* especially for the treatment of *Vandhyatva* and other gynecological disorders. **Aim:** the present study was aimed at setting up a effectiveness of *Phalaghrita* in infertility caused by thin Endometrium which was prepared subjecting it to detailed pharmacognostical, physicochemical and phytochemical evaluation. **Materials and Methods:** Raw drugs of *Phalaghrita* were identified and authenticated by the Pharmacognosy Laboratory, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar. *Phalaghrita* is prepared in pharmacy of I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar. **Results:** result of pharmacognostical study shows that the presence of Acicular crystals of *Manjista*, Prismatic crystals and Pitted vessels of *Yastimadhu*, Simple starch grains of *Ashwagandha*, Scleroids of *Amalaki*, Borderpitted vessels of *Daruharidra*, Borderpitted vessels of *Daruharidra*, Olioiresine of *Haridra*, Pitted vessels of *Kushta*, Fibres with oil globules of *Yavani*, Cork in surface view of *Shatavari*, Prismatic crystals of *Yashtimadhu*. pharmaceutical analysis showed that loss on drying 0.3 %

w/w, Specific gravity 0.9114, Refractive index 1.461, Acid value 2.83. analytical study showed 12 spots at 254 nm and 03 spots at 366 nm. conclusion: the findings of the study will be useful in the identification and standardization of the *Phalaghrita*.

KEYWORDS: *Phalaghrita*, Thin Endometrium, HPTLC, Pharmacognosy, Pharmaceutics, Infertility.

INTRODUCTION

The God has blessed the female with most valuable Gift of motherhood Mother is also called as “Janani” who gives birth to child. A woman hood is never considered complete without achievement of motherhood. *Vandhyatva* (Infertility) is neither a somatic problem nor a psychological problem but it is a psychosocial problem.

Infertility is defined as the inability to conceive a pregnancy after one year of unprotected intercourse. It can either be primary where no previous pregnancy has occurred or secondary where there has been a previous documented pregnancy. In recent years, prevalence of Infertility has dramatically increased up to estimated 10%-15% of couple of reproductive age. In which female is directly responsible in 40-55% of cases. *Ritu* (fertile period), *Kshetra* (well primed, disease free endometrial bed for implantation), *Ambu* (Nutrient fluid), *Beeja* (high quality spermatozoa and high quality ovum) are essential factor for conception. Thin Endometrium is considered under the *Kshetra*.

Phalaghrita is one of the best remedy to increase the Endometrial thickness because thin endometrium is one of the cause of infertility. It also has *Deepana* (appetizer), *Pachana* (digestive), *Vatanulomana* (putting in right direction i.e. downward direction of *vayu*), *Vrishya* (aphrodisiac), *Rasayana* (rejuvenation), *Balya* (strength promoting) and *Brimhana* (Bulk promoting) properties. So, here *Phalaghrita* was selected for treatment of the infertile patient.

MATERIALS AND METHOD

Collection of Raw Drug

Raw drug materials were collected from the pharmacy of Gujarat Ayurveda University. The ingredients and the part used are given in table no. 1.

Table No.1 Phalaghrita (AFI Vol.3 of Part 2)

Ingredients

CONTENT	LATIN NAME	PART USED	RATIO	FORM
Shatavari	<i>Aspargos racemosa</i>	Root tuber	12 gm	Svarasa
Godugdha	Animal product	-----	3.072lit	Liquid
Goghrita	Animal product	-----	768 gm	Liquid
Manjistha	<i>Rubia cordifolia</i>	Root	12 gm	Kalka
Tagar	<i>Valeriana Wallichii</i>	Root	12gm	Kalka
Kustha	<i>Saussurea lappa</i>	Root	12gm	Kalka
Triphala	<i>Emblica officinalis</i> Gaertn. <i>Terminalia bellirica</i> Roxb. <i>Terminalia chebula</i> Retz.	Pericarp	36gm	Kalka
Sharkara	<i>Saccharum officinarum</i>	Ghana	12gm	
Vacha	<i>Acorus calamus</i> Linn.	Rhizome	12gm	Kalka
Meda	<i>Litsea gluinosa</i> Lour	Root tuber	12gm	Kalka
Ksheervidari	<i>Ipomoea digitata</i> Linn.	Root tuber	12gm	Kalka
Ashwgandha	<i>Withania somnifera</i> Linn.	Root	12gm	Kalka
Yavani	<i>Trachyspermum ammi.</i>	Fruit	12gm	Curna
Haridra	<i>Curcuma longa</i> Linn.	Rhizome	12gm	Kalka
Daruharidra	<i>Berberis aristata.</i>	Stem	12gm	Kalka
Ghritabhrusta Hing	<i>Ferula foetida</i>	Niryas	12gm	Kalka
Kakoli	(<i>Abhava dravya</i>)	Root	12gm	Kalka
Ashwagandha	<i>Withania somnifera</i> Linn	Root.	12 gm	Kalka
Payasya	<i>Ipomoea digitata</i>	Root tuber	12 gm	Kalka
Madhuka	<i>Glycyrrhiza glabra</i>	Root	12 gm	Kalka

Preperation of the Drug

Phalaghrita was prepared in the pharmacy of Gujarat Ayurved University, Jamnagar.

Pharmacognostical study

Raw drugs were identified and authenticated by the Pharmacognosy laboratory, I.P.G.T&R.A., Jamnagar. The identification was carried out based on the morphological features, organoleptic features and microscopic study of the individual drugs was studied under the microscope attached with camera, with stain and without stain. The microphotographs were also taken under the microscope.

Physicochemical Evaluation

Phalaghrita was analyzed by using standard qualitative and quantitative parameters, HPTLC was carried out after making appropriate solvent system with Methanolic extract of *Phalaghrita* at the Pharmaceutical Chemistry lab, I.P.G.T. & R.A. Gujarat Ayurveda University, Jamnagar.

OBSERVATION AND RESULTS

Organoleptic Evaluation

Various parameters of the material such as colour, odour, touch and taste of the *Phalaghrita* were observed and recorded. Touch were analyzed with the help of *Darshana*, *Sparshana*, *ghrana* and *Rasana Pareeksha* mentioned in Ayurveda. (By sensory obsestabletons). Results were mentioned in the Table no.2.

Microscopic study

The powder microscopy of *Phalaghrita* confirmed the presence of simple and compound grain with hilum, stained starch grain, pitted parenchyma with fibre, pitted vessels, cork, cortex, phloem, centrally wide vessels, xylem vessels, fibers, xylem parechyma & medullaryrays, xylem vessels, fibre, parenchma etc were the characteristic features of observed in microscopy of drug.(Plate No.1).




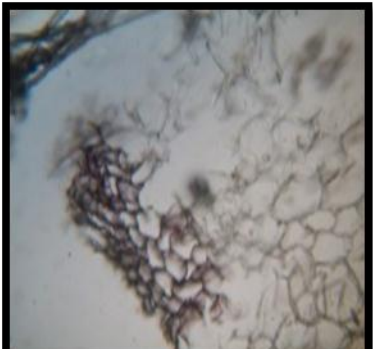
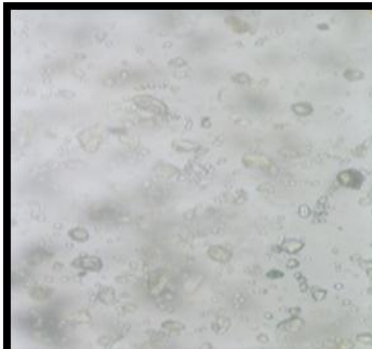

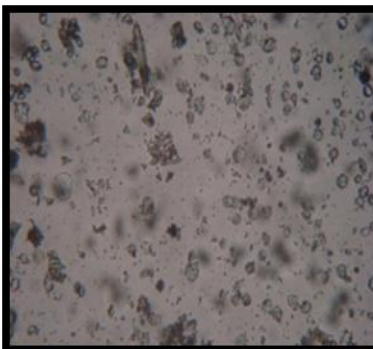


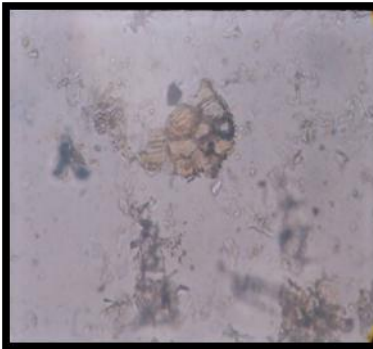
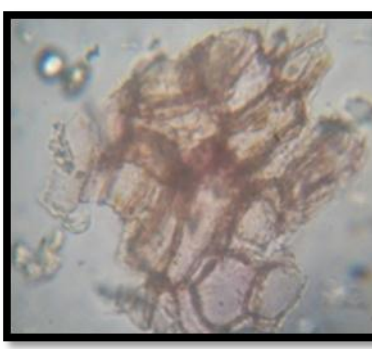

Physico-chemical Analysis

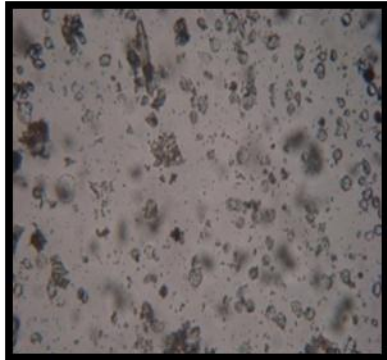
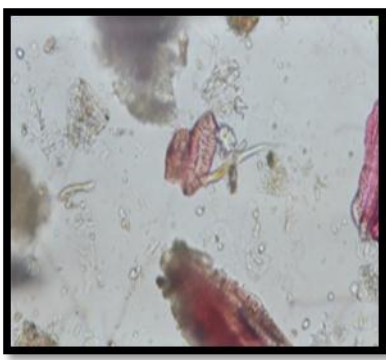

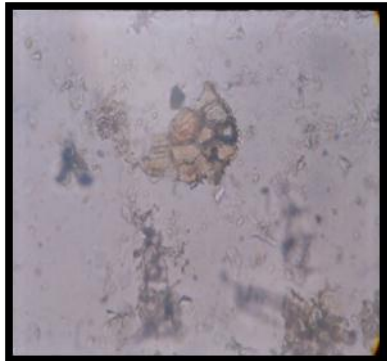
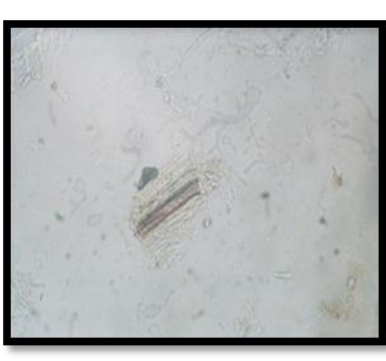
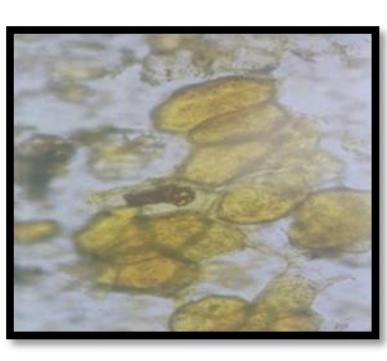
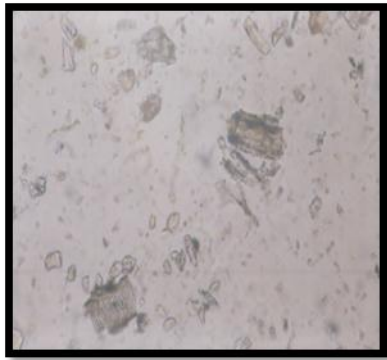
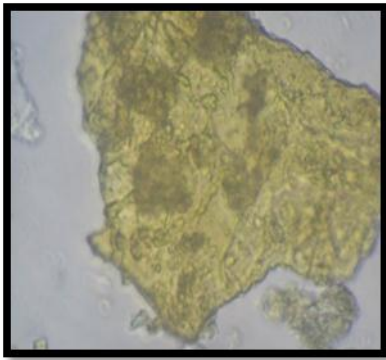

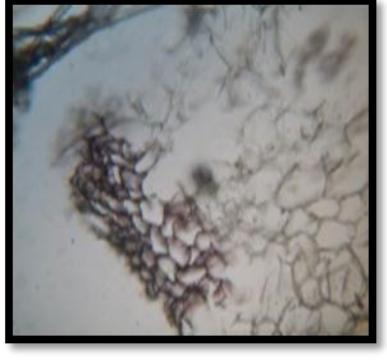
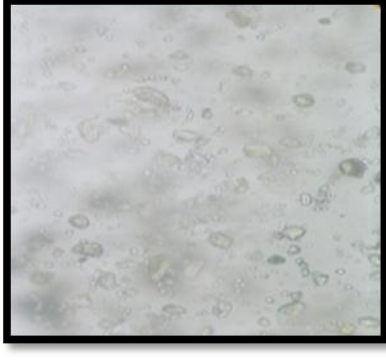
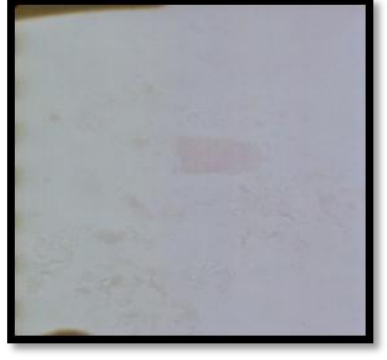
Physico-chemical analyses were carried out by following the parameters. Physico-chemical analysis like refractive index at 40⁰ C is 1.461, specific gravity at room temp. at 32⁰ C is 0.9114, acid value is 2.83, iodine value is 48.56, saponification value is 225. Results were mentioned in the table no. 3.

High Performance Thin Layer Chromatography (HPTLC)

HPTLC was performed as per the guideline provided by API. Methanolic extract of drug sample was used for the spotting. HPTLC was performed using Toluene+ Ethylacetate+ Acetic acid (14:4:2) solvent system and observed under visible light. The colour and R_f values of resolved spots were noted. Analytical study showed 12 spots at 254 nm and 03 spots at 366 nm.

Plate 1: Microphotographs Of *Phala Ghrita* (Figure 1-33).

		
Figure-1 Acicular crystals of <i>Manjistha</i>	Figure-2 Border pitted vessels of <i>Manjistha</i>	Figure-3 Acicular crystals of <i>Shatavari</i>
		
Figure-4 Cork in surface view of <i>Shatavari</i>	Figure-5 Prismatic crystals of <i>Yastimadhu</i>	Figure-6 Pitted vessels of <i>Yastimadhu</i>
		
Figure-20 Simple starch grains of <i>Ashwagandha</i>	Figure-17 Scleroids of <i>Amalaki</i>	Figure-18 Epidermal cells of <i>Amalaki</i>
		
Figure-19 Cork in surface view of <i>Ashwagandha</i>	Figure-25 Cork in surface <i>Daruharidra</i>	Figure-26 Borderpitted vessels of <i>Daruharidra</i>

		
Figure-8. Simple starch grains of <i>Ashwagandha</i>	Figure-23 Stone cells of <i>Bibhitaki</i>	Figure-24 Fibres of <i>Bibhitaki</i>
		
Figure-7. Cork in surface view of <i>Ashwagandha</i>	Figure-29 Spiral vessels of <i>Haridra</i>	Figure-30 Olioresine of <i>Haridra</i>
		
Figure-31 Pitted vessels of <i>Kushta</i>	Figure-32 Epidermal cells with oil globules of <i>Yavani</i>	Figure-33 Fibres with oil globules of <i>Yavani</i>
		
Figure-4. Cork in surface view of <i>Shatavari</i>	Figure-5. Prismatic crystals of <i>Yashtimadhu</i>	Figure-6. Pitted vessels of <i>Yashtimadhu</i>

Pharmaceutical Evaluation

Organoleptic parameters of *Phalaghrita*: *Sparsha* - Consistency, *Rasa* – Taste, *Rupa* -Colour, *Gandha* - Odour were studied and details are placed in Table - 2.

Table 2: Showing Organoleptic characteristics of *Phalaghrita*.

Sr. No	Characters	Observed
1	Touch	Viscous
2	Colour	Yellowish
3	Taste	Bitter & Slight Sweet
4	Consistency	Semi-Solid
5	Odour	Agreeable

Table 3: Showing Physico-Chemical parameters of *Phalaghrita*.

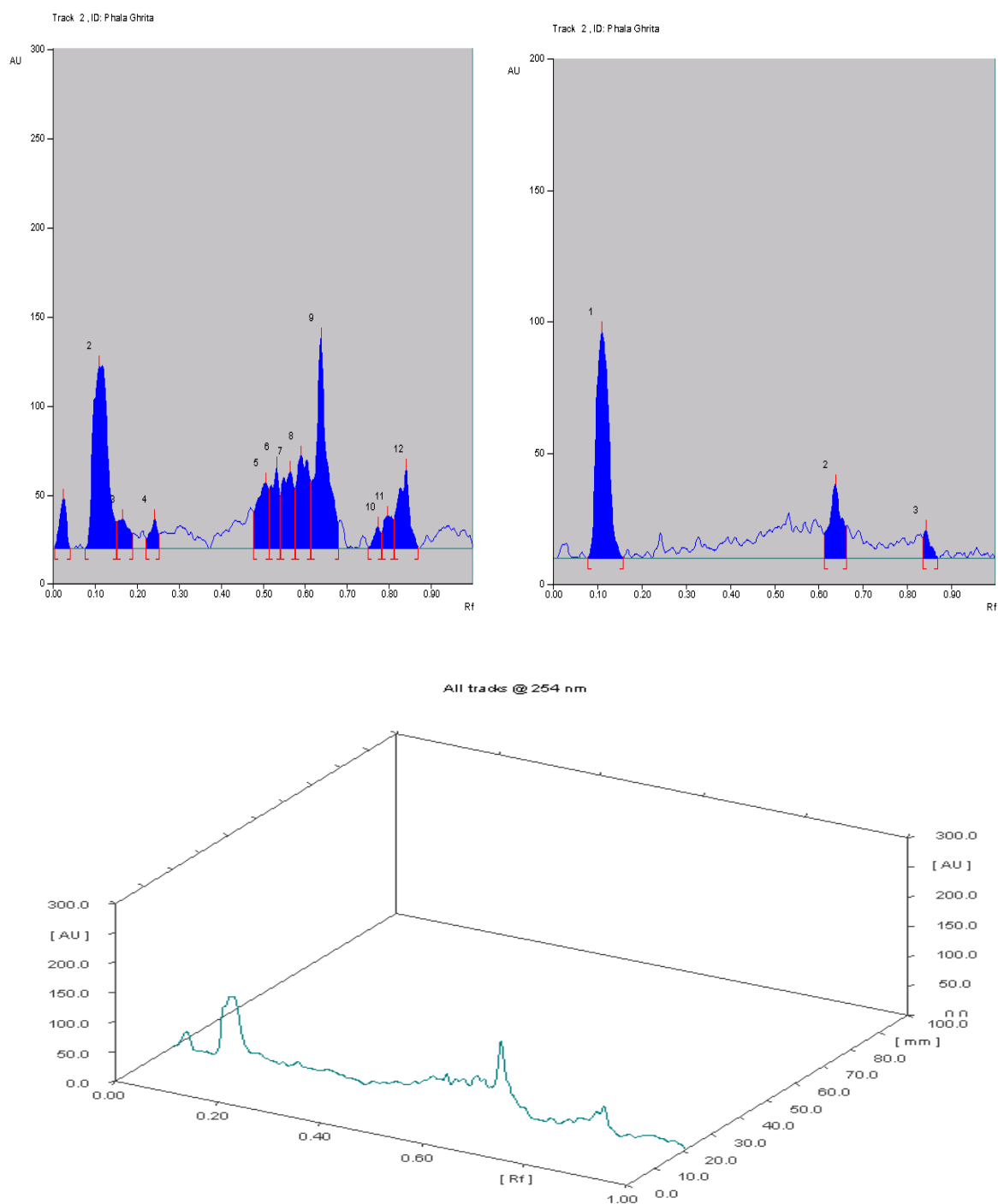
Sr. No.	Test	<i>Phalaghrita</i>
1	Loss on drying	0.3 %w/w
2	Specific gravity	0.9114
3	Refractive index	1.461
4	Iodine value	48.56
5	Saponification value	225
6	Acid value	2.83

Results of HPTLC study

HPTLC was carried out after making appropriate solvent system with Methanolic extract of *Phalaghrita*. On performing HPTLC, visual observed *Ghrita* on under UV light showed few spots but on analyzing under densitometer at 254nm and 366nm it resulted into 7 and 3spots respectively. Results of HPTLC are given in Table no. 4 and densitogram is shown in plate 2.

Table 4: HPTLC profile of *Phalaghrita*.

Toluene : Ethyl acetate: Formic acid (5: 3.5: 0.5 v/v)				
Sr. No.	Sample	Conditions	No. of spots	Max. Rf value
1.	<i>PhalaGhrita</i>	Short UV– 254 nm	12	0.02, 0.11, 0.17, 0.24, 0.51, 0.53, 0.56, 0.59, 0.64, 0.77, 0.80, 0.84
		Long UV– 366 nm	03	0.11, 0.64, 0.84

Plate 2: Densitogram Of *Phalaghrita* At 254 And 366

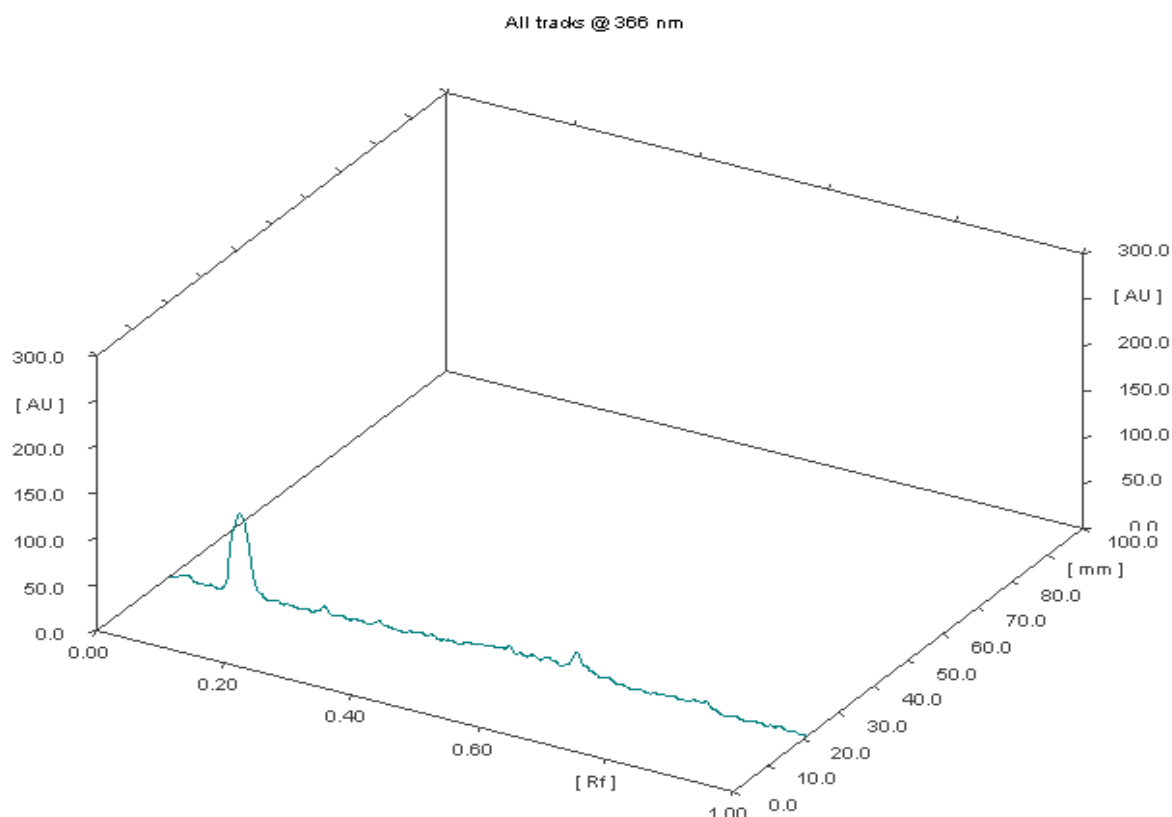


Plate: 2 Three Dimensional Densitogram Of *Phalaghrita* At 254 And 366nm.

DISCUSSION

Pharmacognosy and pharmaceutical evaluation of *Phalaghrita* was performed which is a potent medicine in the management of thin endometrium induced Infertility. In physiochemical analysis; refractive index at 40⁰ C is 1.461, specific gravity at room temp. at 32⁰ C is 0.9114, acid value is 2.83, iodine value is 48.56 and saponification value is 225. Though the groundwork requisites for the standardization of *Phalaghrita* are covered in the current study, additional important analysis and investigations are required for the identification of all the active chemical constituents of the test drug to substantiate the clinical efficacy.

CONCLUSION

Pharmacognostical study findings confirm that all characters were found in ingredient drugs of *Phalaghrita*. The physicochemical analysis are inferred that the formulation meets maximum qualitative standards and all the parameters discussed here may be used as identifying tools for the quality assessment of *Phalaghrita*. Thus Outcome of the study may be taken as standard references for the further studies.

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