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Pharmacognostical and Pharmaceutical Evaluation of *Nishaditaila* - An Ayurvedic Oil Based Medicine

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Abstract: ***Background: NishadiTaila is a Sneha Kalpana, indicated in the management of Mukharoga. Objective: Present study is aimed to look out on herbaldrugs used in the preparation of NishadiTaila and standardization of pharmacognostical, physicochemical parameters and HPTLCevaluation. Methods: Identification and authentication was done by pharmacognostical study i.e. organoleptic characters and powdermicroscopy. Physicochemical evaluation and HPTLC study was carried out of final product. Results: Pharmacognostical study shows starch grains, bordered pitted vessel oil globules, group of fibersoleoresins etc. are the diagnostic characters. Conclusion: Identification, Authentication of Herbal drug used in the preparation. Physicochemical evaluation has been carried out of prepared drug which is further useful for standardization of Nishadi Taila and other researches. The presence of oil globules, endosperm fragments, pollen grain cork cells were the characteristic features observed in the microscopy of drug combination. Refractive index of NishadiTaila found 1.4820, specific gravity 0.9148, iodine value 92.68, saponification value183.41 and acid value is 6.05.***

Keywords: *NishadiTaila,* Pharmacognosy. Phytochemical

1. Introduction

OSMF can be correlated with *Sarvasara Mukharoga* described in classics by various *Acharya*. Some scattered symptoms like inability to open the mouth *(Kruchhen Vivrunoti – VatajaSarvasara)*[1], burning sensation in mouth *(Daha- Pittaja Sarvasara)*[2], pain in mouth *(Toda-Vatika Sarvasara)*[1], blanching of the oral mucosa *(Antahkapolamashritya Shyavpandu- Kapharbuda)*[7]are found in *Mukharoga* .On analyzing at the disease conditionOSMF can be considered in the *Vata Pradhana Tridoshaja Mukharoga*. It is obvious that it needs to be treated at local as well as systemic level *Kaya Sirsovirekam*, *Vamana*, *Kavala Dharan*, and use of *Katu* & *Tiktadravya* and other procedure to remove *Kapha* and *RaktaharaKriya* should be done.Kaval/ *Gandusha* is the process of holding any medicated liquid like *Kwatha, Swarasa, Madhu, Ghrita, Taila, Gomutra, Ushnodaka*etc. in the mouth which can be move inside.[2]*Acharya Charaka*has given importance of *TailaGandusha Dharana* as it gives strength to jaw bone, voice, facial muscles; helps in developing taste; one will never suffer from dryness of mouth & throat, cracked lips, tooth destruction, toothache, sensitivity of teeth by sour foods & drinks. Thus roots of teeth become strong & one can chew even hard foods easily.[3] There are four types of *kavala* descried by *Acharya Snehika, Prasadana, Shodhana, Ropana*.*Nishadi Taila*[4]mentioned in the context of *Mukharogachikista* by *Bhavprakasha* so this *Taila* preparation has been taken for the study, to analyse the quality of *Nishadi Taila* subjected for Pharmacognostical study of individual components and physico-chemical analysis of *NishadiTaila.*

2. Materials and Methods

2.1 Collection, Identification and authentication of raw drugs

The raw drugs for the study were procured form the Pharmacy of Gujarat Ayurved University The ingredients & parts used in the preparation of the final product are listed in the Table 1.The ingredients were identified and authenticated in the Pharmacognosy Laboratory, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar**.**

2.2 Method of Preparation

Drug was prepared in the pharmacy of Gujarat AyurvedUniversity, Jamnagar.

2.3 Pharmacognostical Evaluation of *Nishadi Taila*

Powder microscopy
The powders of respective parts of all the ingredients of *NishadiTaila* studied separately with and without staining covered with cover slip and observed under the Carl Zeiss Trinocular Microscope. The microphotographs were taken by using Carl Zeiss Trinocular attached with camera.[5]
Organoleptic Study
The prepared drug *NishadiTaila* was evaluated by organoleptic characters like colour, taste, odour etc., and was carefully noted down[6]

Physico-Chemical Analysis of *NishadiTaila*
*NishadiTaila*was analysed 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[7]

High Performance Thin Layer Chromatography (HPTLC)

Methanol extract of *NishadiTaila*was used for High performance thin layer chromatography (HPTLC) study. Extract of *NishadiTaila*was spotted on pre-coated silica gel GL60254 aluminum plate as 10mm bands by means of a CamagLinomate V sample applicator fitted with a 100µL Hamilton syringe. Toluene: Ethyl acetate: Acetic acid (7:2:1) was used for *NishadiTaila*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.[8]

3. Results

Pharmacognostical evaluation

Powder microscopy

Powder microscopy of all the ingredients of *NishadiTaila*was studied and microphotographs were placed at respective figures.[Plate-1 (Fig. 1-15)].

Organoleptic parameters

The colour of *NishadiTaila*is golden yellow, whereas the taste of *NishadiTaila* isastringent. The odour is characteristic and consistency on touch is liquid and sticky. These are all the organoleptic parameters of *NishadiTaila* the mentioned in Table 2.

Physico-Chemical Analysis

Physico-chemical parameters of *NishadiTaila* such as acid value, refractive index, saponification value, iodine value and specific gravity are mentioned in Table 3.

HPTLC profile of *NishadiTaila*

On performing HPTLC, thechromatogram of *NishadiTaila*showed 05 spots at corresponding Rf values 0.00, 0.04, 0.31, 0.57, 0.72 in short wave UV 254 nm and 03 spot corresponding Rf value 0.0, 0.85, 0.92 obtained in long wave UV 366 nm. Table 4.

Table 1: Ingredients of *NishadiTaila*

Sr. No.	Name of the Drug	Botanical/Latin Name	Part used	Part
1	*Haridra*	*Curcuma Longa* Linn.	Rhizome	2
2	*Nimb Patra*	*Azadirachta Indica* A. Juss Syn. Melia	Leaves	1
3	*Madhuka*	*Glycyrrhiza Glabra*Linn.	Root	1
4	*Neelotpala*	*NympheaNouchali*	Flower	1
5	*TilaTaila*	*SesamumIndicum*Linn.	Oil	16

Table 2: Organoleptic characters of *NishadiTaila*

Sr. No.	Character	Results
1	Color	Yellowish
2	Odor	Characteristic
3	Taste	*Kashaya-Tikta*
4	Touch	Liquid, sticky

Table 3: Physico-chemical parameters of *NishadiTaila*

Sr. No.	Test	Sample Results %W/W
1.	Acid value	10.1
2.	Refractive index	1.4910
3.	Saponification value	182.41
4.	Iodine value	90.69
5.	Specific Gravity	0.065

Table 4: Rf values of *NishadiTaila*

Sr. No.	UV light	No. of Spots	Max. Rf values
1.	Short (254 nm)	05	0.00,0.04, 0.31, 0.57, 0.72
2.	Long (366nm)	03	0.0, 0.85, 0.92

Plat 1(Fig. 1-15): Microphotographs of the ingredients of *NishadiTaila*

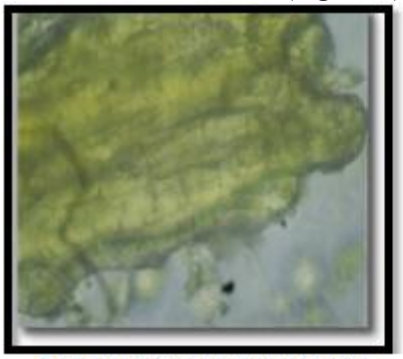


Figure 1: Scleroids of *Yastimadhu*

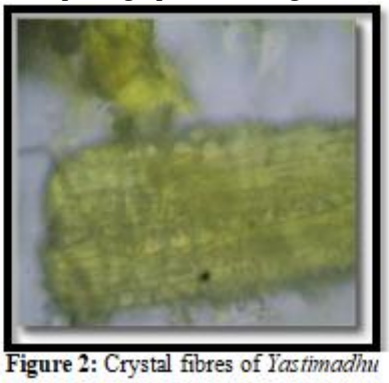


Figure 2: Crystal fibres of *Yastimadhu*

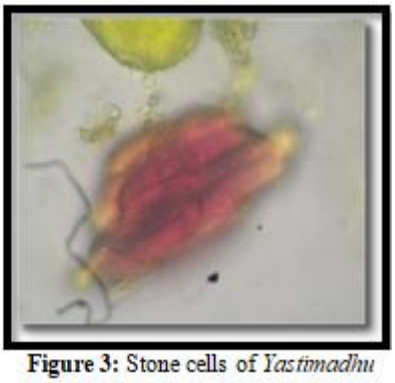


Figure 3: Stone cells of *Yastimadhu*

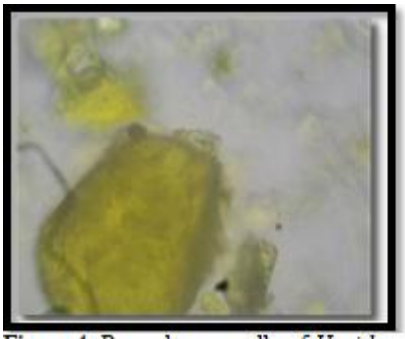


Figure 4: Parenchyama cells of *Haridra*

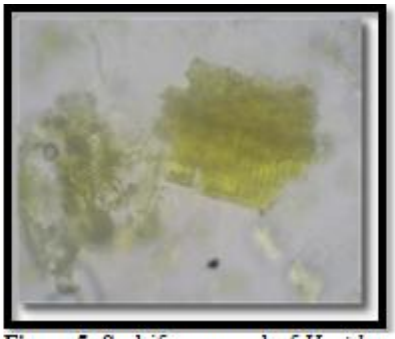


Figure 5: Scalriform vessel of *Haridra*

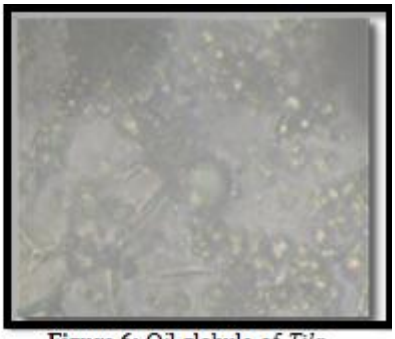


Figure 6: Oil globule of *Tila*

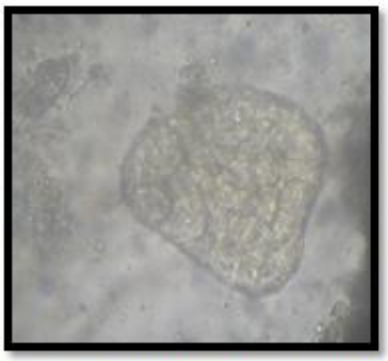


Figure 7: Endosperm fragments of *Tila*

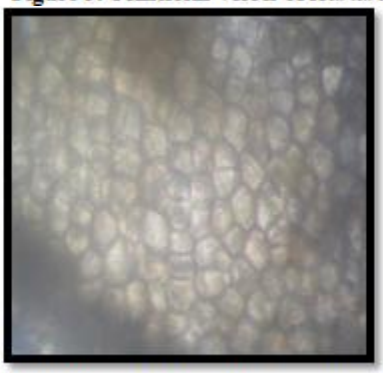


Figure 8: Cotyledon surface view of *Tila*


Figure 9: Lignified branched trichome of *Neelotpala*

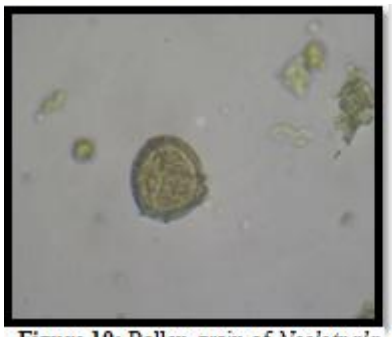


Figure 10: Pollen grain of *Neelotpala*


Figure 11: Simple trichome of *Neelotpala*

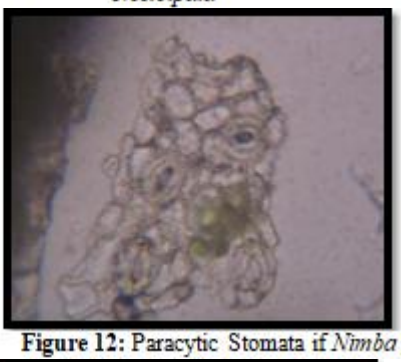


Figure 12: Paracytic Stomata if *Nimba*

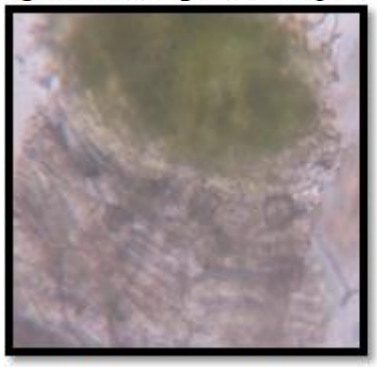


Figure 13: Rosette crystals of *Nimba*


Figure 14: Simple fibre of *Nimba*

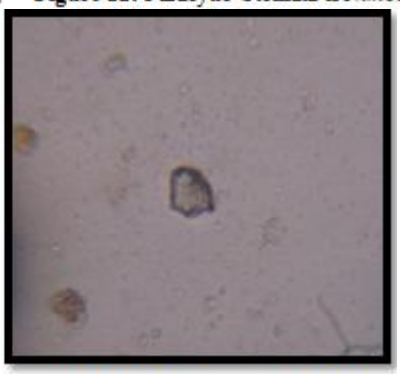


Figure 15: Prismatic crystal of *Nimba*

Plate-2 (Fig. 1-2) Densitogram of *NishadiTaila* at 254nm and 366nm
Plate-3 (Fig. a,b,c) Three dimensional (3D) Densitogram at (a) 254nm (b) 366nm (c) Specific Comparator Graph

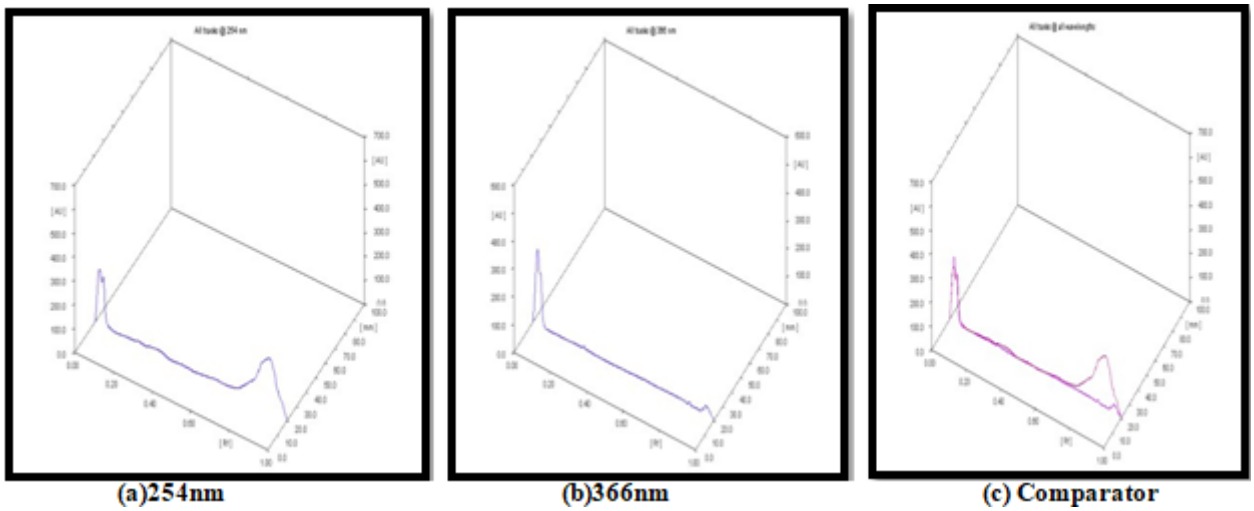


Plate 4: (Fig. a,b) HPTLC finger prints at (a) 254nm (b)366nm (c) after spray

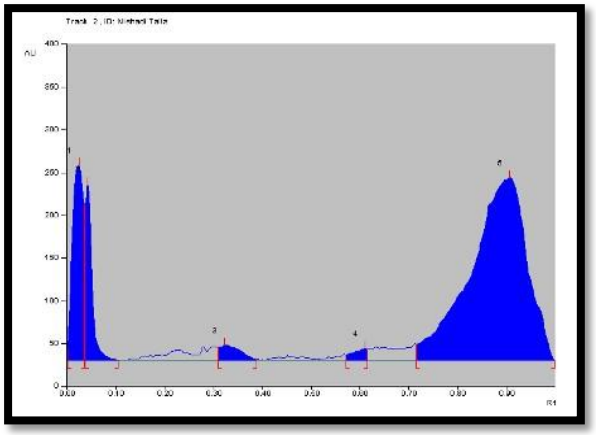


Figure 3: 366nm Peak Display

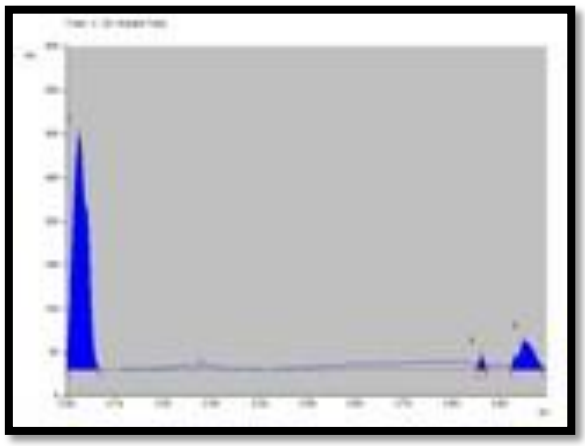
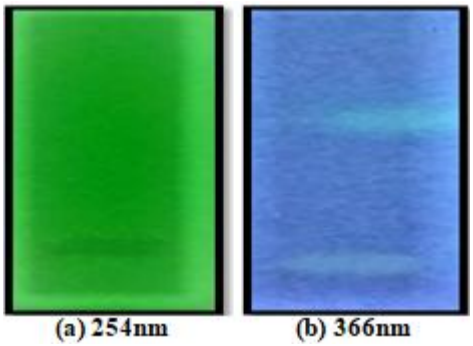


Figure 5: 254nm Peak Display



4. Discussion

Pharmacognostical evaluation showed that the *NishadiTaila* contains all the ingredients which were observed in the microscopically 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. All Physico-chemical parameters of *NishadiTaila* are normal in limit and shows the product is of good quality and better results in the diseases. HPTLC results showed that the 5 spots at 254 nm and 3 spot at 366 nm.

5. Conclusion

Pharmaogonostical and phytochemical evaluation of *NishadiTaila* illustrated the specific characters of all ingredients which are used in the preparation. The endosperm fragment, oil globule, cotyledon surface, rosette crystal, simple fibre, prismatic crystal, lignified branched trichome, pollen grain, simple trichome, stone cell, parenchyma cell are observed in the ingredients. All the physico-chemical parameters like acid value, saponification value, iodine value, refractive index, specific gravity analysed were within the normal range. All the results showed the quality of the preparation is standard. 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.

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