

Comparative Pharmacognostical Evaluation of *Khadirashtaka yavakuta (Powder) and Kashaya (Decoction)*

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ABSTRACT

Khadirashtaka Kashaya, a compound Ayurvedic formulation is prescribed mainly in the management of *Kushtha Vyadhi* (skin diseases), *Visarp Roga* (erysipelous) and *Masoorika* (type of measles) and it is mentioned in *Sangraha Grantha* like, *Yogaratanakara*, *Gadanighraha*, *Bhaishajya Ratnavali*. The era is rising with many of novel dietary habits and lifestyle which are ill-assorted with health. Consumption of incompatible food combinations, heavy meals; faulty temperature acclimatisation leads to several metabolic changes which results in unhealthy skin. Their prolonged exposure leads to long lasting dermatological abnormalities having vitiated *Rasa* and *Rakta Dhatu*. *Khadirashtaka Kashaya* helps to break the pathogenesis of skin disorders by its bitter-astringent taste, light and dry properties as well as blood purifying activity. Till date no work was found having comparatively scientifically analysed on this drug. In Present study *Khadirashtaka Kashaya* and *Khadirashtaka choorna* have been evaluated for Pharmacognostical analysis. Finished product microscopy and decoction showing the quality and genuineness of all the constituents of *Khadirashtaka Kashaya* (Decoction) has been done. Organoleptic features of coarse powder made out of the crude drugs were within the standard range.

Keywords: *Khadirashtaka Kashaya*, *Kushtha*, Pharmacognosy.

INTRODUCTION

Ayurveda is an ancient lifestyle practice which aims to create harmony within the human body, based on holistic approach. Ancient texts of Ayurveda such as *Brihatrayee* have in detail explanation of *Kushtha Roga* and its treatment. Later on, during *Sangraha-kala* various Acharya compiled effective and clinically proven formulations for various diseases. *Khadirashtaka Kashaya* is mentioned in *Yogaratanakara*, *Gadanighraha*, *Bhaishajya Ratnavali* with different contexts of indication i.e. *Kushtha*¹, *Visarpa*² and *Masoorika*³ respectively. All three disease have presentations on skin. *Kushtha* and *Visarpa* diseases have common etiological factors mentioned as *Saptak Dravyasangraha* in *Charak Samhita*⁴. The era is rising with many of novel dietary habits and lifestyle which are ill-assorted with health. Consumption of incompatible food combinations, heavy meals, immediate exposure of cold and hot, travelling and exercise just after meals, etc. leads to several metabolic changes which results in unhealthy skin.⁵ Their prolonged exposure leads to long lasting dermatological abnormalities having vitiated *Rasa* and *Rakta Dhatu*. The study drug *Khadirashtaka Kashaya* contains *Khadira*, *Haritaki*, *Bibhitaki*, *Aamalaki*, *Nimba*, *Patola*, *Guduchi* and *Vasa*. *Khadirashtaka Kashaya* helps to break the pathogenesis by its *Tikta Kashaya Rasa*, *Anushna Virya*, *Madhura Vipaka*, *Ruksha*, *Laghu Guna*, as well as blood purifying activity. *Khadira* is mentioned as

best *Kushthaghna*⁶, *Triphala* is also said for treatment of *Kushtha*⁷. It has *Anuloman* property which helps to purify body by regular bowel excretion. Regular *Virechana* is mentioned in skin disorders.⁸ *Nimba*⁹ and *Vasa*¹⁰ also mentioned having *Kushthaghna* properties. So, the combination exclusively becomes drug of choice in the treatment of *Kushtha* (skin disorders). The present work was carried out to evaluate and compare pharmacognostical aspects of *Khadirashtaka* powder (*Yavkut Churna*) and decoction (*Kwatha*).

MATERIALS AND METHODS

Collection of raw materials

Raw drug materials except *Patola* were collected from the pharmacy department, IPGT & RA, Gujarat Ayurveda University and were identified and authenticated at Pharmacognosy laboratory. *Patola* was collected from the forest area of the periphery of Una district, Gujarat and it was identified and authenticated at Pharmacognosy laboratory.

Preparation of *Khadirashtaka Kashaya*

Khadirashtaka Kashaya was prepared as per classical method. All ingredients were taken in prescribed ratio equal in quantity (Table 1). Powdered and stored in airtight glass jars under hygienic conditions.

Pharmacognostical evaluation

Table 1: Composition of *Khadirashtaka Kashaya*.

Sr.no	Sanskrit name	Botanical name	Family	Part used
1.	<i>Khadira</i>	<i>Acacia catechu</i> Willd.	Mimosoideae	<i>Twak</i> (Bark)
2.	<i>Amla</i>	<i>Phyllanthus emblica</i> Linn.	Euphorbiaceae	<i>Phalamajja</i> (Pericarp)
3.	<i>Bibhitika</i>	<i>Terminalia belerica</i> Roxb.	Combretaceae	<i>Phalamajja</i> (Pericarp)
4.	<i>Haritaki</i>	<i>Terminalia chebula</i> Roxb.	Combretaceae	<i>Phalamajja</i> (Pericarp)
5.	<i>Nimba</i>	<i>Azadirachta indica</i> Linn.	Meliaceae	<i>Twak</i> (Stem-bark)
6.	<i>Patola</i>	<i>Trichosanthes cucumerina</i> Roxb.	Cucurbitaceae	<i>Panchanga</i> (whole Plant)
7.	<i>Vasa</i>	<i>Adhatoda vasica</i> Nees.	Acanthaceae	<i>Patra</i> (leaves)
8.	<i>Guduchi</i>	<i>Tinospora cordifolia</i> Willd.	Menispermaceae	<i>Kand</i> (stem)

Table 2: Organoleptic characters *Khadirashtaka yavkuta Churna* and *Khadirashtaka Kwatha*.

Organoleptic Characters	<i>Khadirashtaka yavkuta Churna</i>	<i>Khadirashtaka Kwatha</i>
Taste	<i>Tikta, Kashaya</i> (bitter-astringent)	<i>Tikta, Kashaya</i> (bitter-astringent)
Colour	Yellowish dark brown	Yellowish Brown
Odour	<i>Kashaya Tikta</i>	<i>Tikta Kashaya</i> (Bitter-astringent)
Touch	coarse	Liquid
Consistency	coarse Powder	Liquid

The purpose of the pharmacognostical study was to confirm the authenticity of the drugs used in the preparation of *Khadirashtaka Kashaya*. Raw drugs were identified and authenticated by the Pharmacognosy lab, I.P.G.T & R.A, Gujarat Ayurved University, Jamnagar. The identification was carried out based on the morphological features, organoleptic features and powder microscopy of the individual drugs. Later, comparative Pharmacognostical evaluation of the *Churna* (powder) and *Kashaya* (decoction) was carried out. Decoction was made by classical method of *Kwatha* Preparation¹¹. *Churna* soaked in small quantity of distilled water, filtered through filter paper, filtrate studied under the microscope attached with camera, with stain and without stain. Same way, *Kashaya* was filtered and studied. The microphotographs were also taken under the microscope¹².

RESULTS

Organoleptic findings

Organoleptic findings of *Khadirashtaka Kashaya* is given in Table 2.

Pharmacognostical study

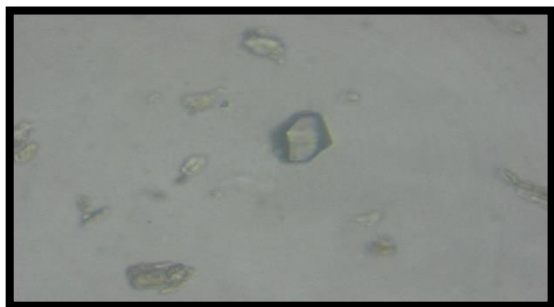
The initial purpose of the study was to confirm the authenticity of the drug used in the preparation of *Khadirashtaka Kashaya*. For the aim of comparative study, microscopy of powder and decoction was showed following. In powder microscopy, rhomboidal crystal of *Khadira*, brown content of *Bibhitaki*, Trichome of *Patola*, Fragment of border pitted vessel of *Guduchi*, rosette crystal of *Bibhitaki*, Trichome of *Vasa*, trichome of *Bibhitaki*, brown content of *Khadira*, Oil globules of *Nimba*, Stone cell of *Haritaki*, Stone cell of *Bibhitaki*, starch grain *Guduchi*, simple fiber of *Khadira*, Stone cells *Aamlaki*, crystal fiber of *Nimba* and cork cells of *Guduchi* were found. After staining it showed fragment of border pitted vessel of *Guduchi*, Group of simple fiber of *Khadira*, scleriod of *Aamlaki* and collenchyma cells of *Guduchi*, fragment of spiral vessel of *Patola*, scleroid of *Haritaki*, lignified stone cells of *Bibhitaki*, and lignified fibers of *Nimba*. (Microphotographs Plate 1)

In microscopic study of decoction, trichome of *Bibhitaki*, Deformed Rhomboidal crystal of *Nimba*, Tannin content of *Khadira*, Annular vessel of *Patola*, Deformed Rhomboidal crystal of *Khadira*, Annular vessels of *Vasa*, Cork cells of *Guduchi*, pitted vessels of *Patola*, epidermal cells of *Patola*, Silica deposition of *Aamlaki*, Pitted scleroid of *Haritaki*, collenchyma cells of *Guduchi*, cork cells of *Nimba*, deformed stone cell of *Haritaki*, fibers of *Patola*, mesocarp cells of *Aamlaki* were found. (Microphotographs Plate 2)

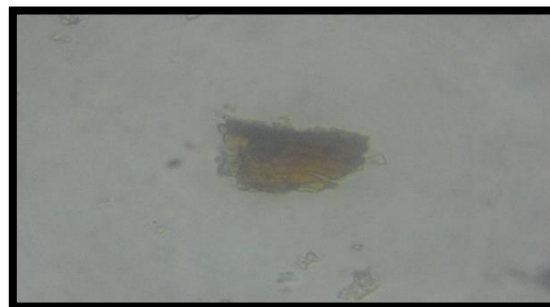
DISCUSSION

Medicinal plants pursue a great part of the *Ayurvedic* treatment as raw materials; so, correct identification of those plants are necessary. The *Ayurvedic* system of medicine is facing another major problem that is quality control of crude drugs. To get the full therapeutic impact of the drugs, it has to be remained free from adulterants. Thus, the quality of the drugs can be lift up to the adequate standard. For this, proper identification of the plant excluding with the adulterant microscopically and morphologically is necessary. The present study was undertaken to standardize *Khadirashtaka Kashaya*, hence the material was subjected to minimum Pharmacognostical evaluation which showed that all the observed characters which are from all eight ingredients used in the compound formulations showed that authenticity and purity of the finished product. Decoction liquid also showed characters from all eight ingredients. Some of the characters showed deformity in cell wall due to heat exposure. As *Agni Mahabhut* causes *Paka Prakriya* which may result in structural modification. *Agnisannikarsha* (exposure of heat) is said one of the *Sanskara* which has potency to *Gunantaradhana*.¹¹ Another way of understanding this is taking *Panchabhautika Siddhanta* into consideration. Powder has *Parthiva Pradhana Guna*, while decoction is made by the process with *Jala* and *Agni Mahabhut Pradhana* media. It may induce *Mardava Guna* in characters. Brown content of *Khadira* and *Bibhitaki* may

Microphotographs Plate 1: *Khadirashtaka* powder microscopy



1. Rhomboidal crystal of *Khadira*



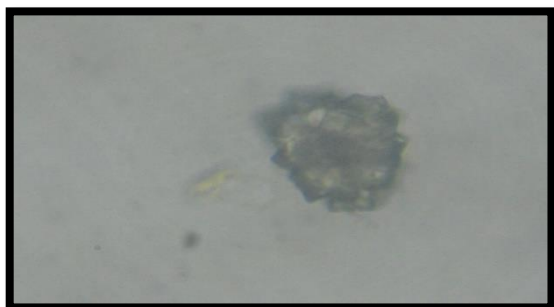
2. Brown content of *Bibhitaki*



3. Trichome of *Patola*



4. Fragment of border pitted vessel of *Guduchi*



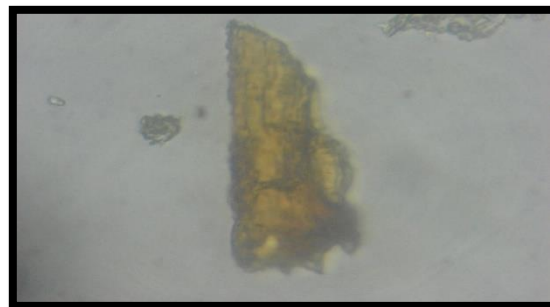
5. Rosette crystal of *Bibhitaki*



6. Trichome of *Vasa*



7. Trichome of *Bibhitaki*



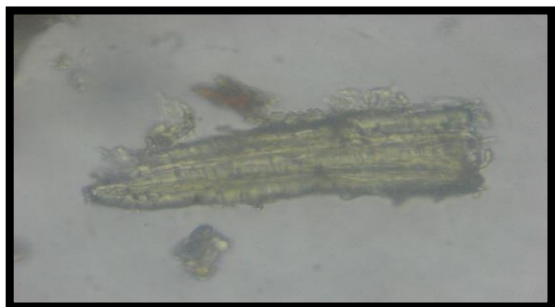
8. Brown content of *Khadira*



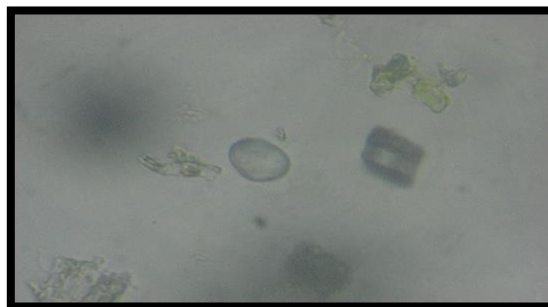
9. Oil globule of *Nimba*



10 Stone cell of *Haritaki*



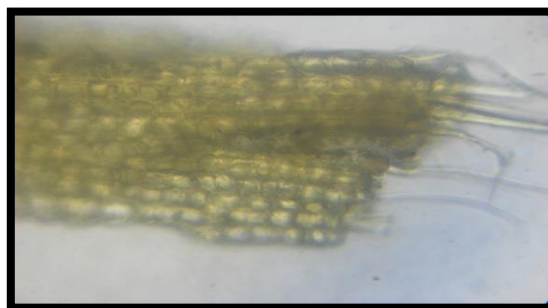
11 Stone cell of *Bibhitaki*



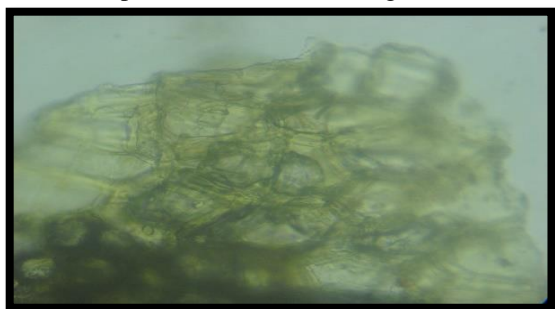
12 Starch grain of *Guduchi*



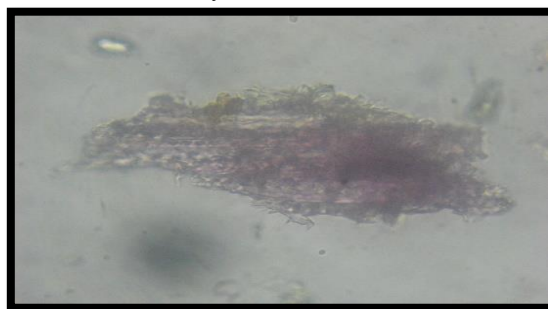
13 Simple fiber of *Khadira* along with tennin



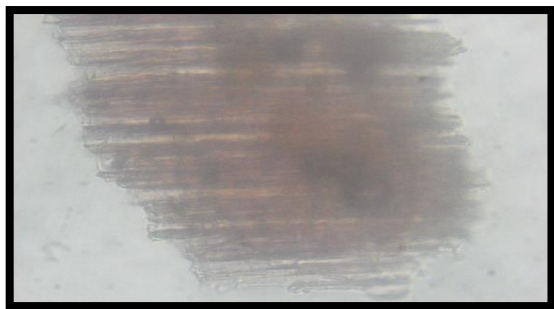
15 Cork cells of *Guduchi*



14 Crystal fiber of *Nimba*



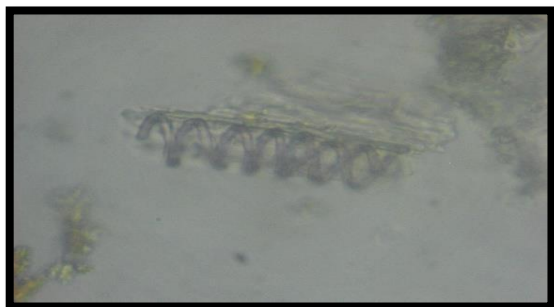
16 Lignified border pitted vessel of *Guduchi*



17 Group of lignified fibres of *Guduchi*



18 Cholechyma cell of *Guduchi*



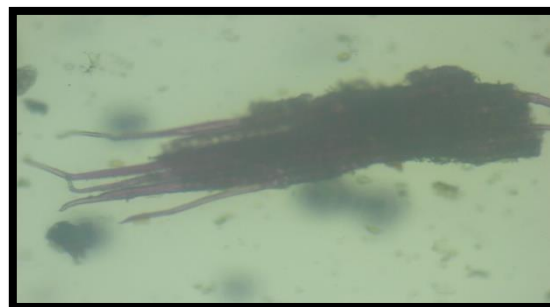
19 Fragment of spiral vessel of *Patola*



20 Scleroid of *Haritaki*



21 Lignified stone cell of *Bibhitaki*

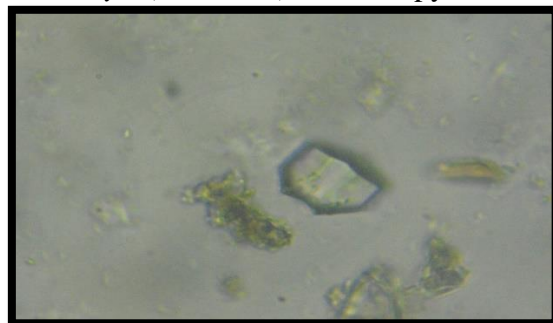


22 Lignified fibers of *Nimba*

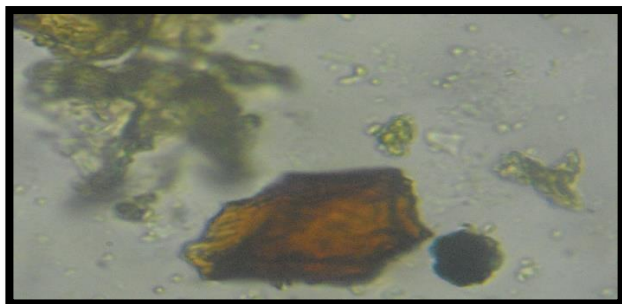
Microphotographs Plate 2: *Khadirashtaka Kashaya* (decoction) microscopy



1: Trichome of *Bibhitaki*



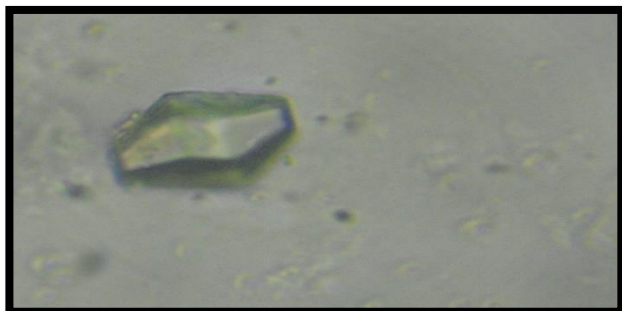
2: Rhomboid crystal of *Nimba*



3. Tannin content of *Khadira*



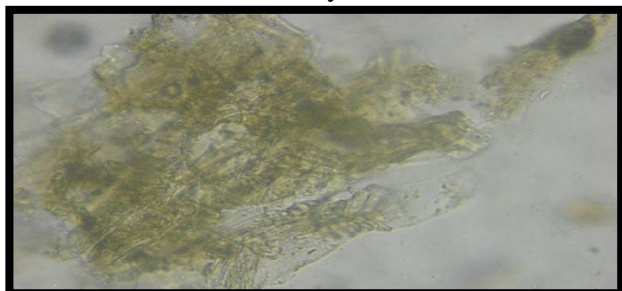
4. Annular vessels of *Patola*



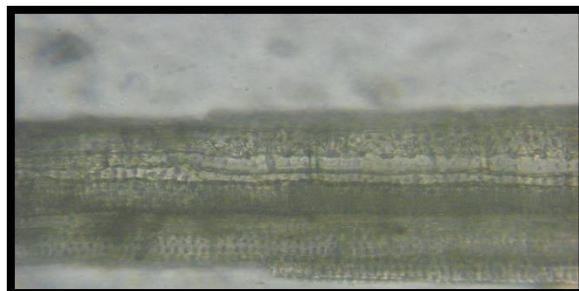
5. Rhomboidal crystal of *khadira*



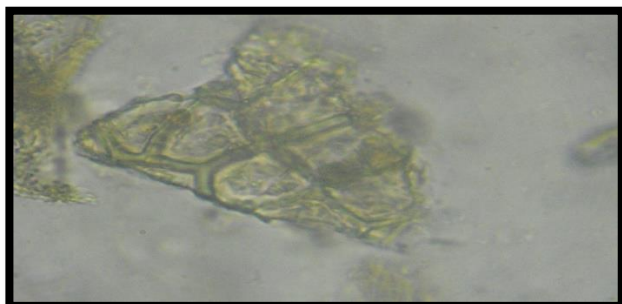
6. Annular vessels of *Vasa*



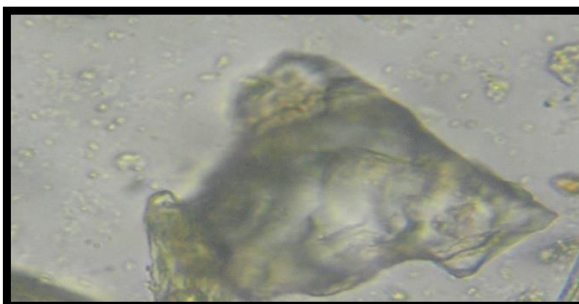
7. Cork cells of *Guduchi*



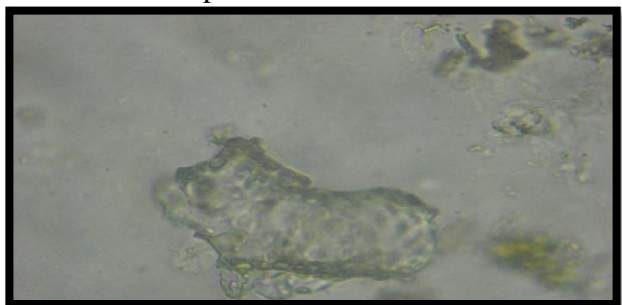
8. Pitted vessels of *Patola*



9: Epidermal cell of *Patola*



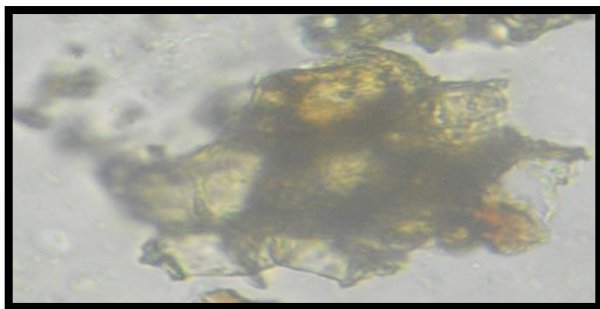
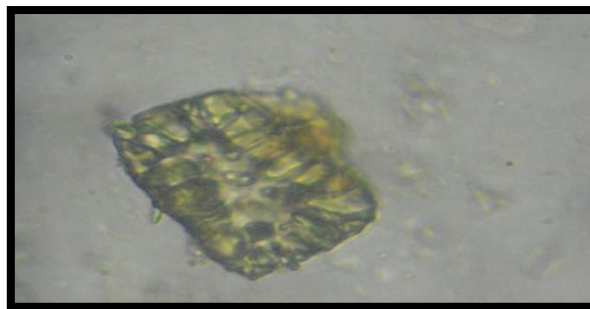
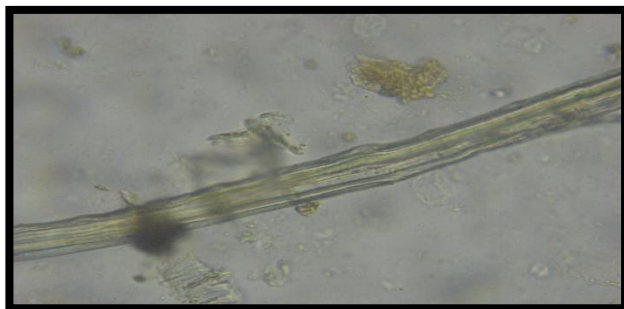
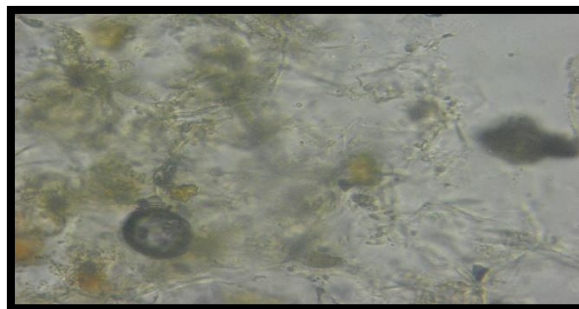
10: Cilica deposition of *Aamlaki*



11: Pitted scleroid of *Haritaki*



12: Chlorenchyma cells of *Guduchi*

13: Cork cells of *Nimba* with tennin content14: Deformed stone cell of *Haritaki*15: Fiber of *Patola*16: Mesocarp cells of *Amlaki*

get dissolved while boiling, so it was not seen in decoction microscopy. Stone cell of *Haritaki* was seen in powder sample but it was found deformed due to exposure of heat in water media. Oil globules of *Nimba* were found in powder microscopy, but it were not found in decoction microscopy; probably due to boiling process some constituents dissolved and some got evaporated. Cork cells of *Guduchi* remained unchanged may be due to its hard structure.

CONCLUSION

Pharmacognostical analysis of *Khadirashtaka Kashaya* showed the specific characters of all ingredients which were used in the preparation. Pharmacognostical findings confirm the ingredients. Raw drugs were cross verified with API and no major changes were observed. When the finished product was analyzed under the microscope, it is concluded that the formulation meets the minimum qualitative standards as reported in the API at a preliminary level. Pharmacognostical Comparison between powder and decoction microscopy is suggestive of transformation and destruction due to *Agni* and *Jala Mahabhuta* and *Paka Prakriya*. Though the groundwork essentials for the standardization of *Khadirashtaka Kashaya* was covered in the current study, additional important analysis and investigations are required for the identification of all the active chemical constituents. The results of this study may be used as the reference standard in advance research undertakings of its kind.

REFERENCES

1. Indradev Tripathi and Dr. dayashankar Tripathi editors, Yogratanakara, Chaukhambha Krishnadas Academy, Varanasi, reprint 2011, Kustha Nidana Chikitsa Prakrana, verse 63, page 648
2. Vaidya Shodhala, Gadanigraha, edited by Sri Gangasahay Pandeya, Chaukhambha Sanskrit Sansthan, Varanasi, reprint 2005, Visarpadhikara Chapter, verse 66, page 839
3. Govindadas, Bhaisajya Ratnavali, Vidhyotini commentary, edited by Rajeshwardattshastri, Chaukhambha Sanskrit Sansthan, Varanasi, reprint 2005, Masoorika Chikitsa Chapter, verse 40-41, page 942
4. Agnivesha, Charaka Samhitha, Edited by Vaidya Acharya Yadavji Trikamji, Chaukhambha Prakashan, Varanasi, Reprint 2007, chikitsasthan, Kustha Chikitsa, verse 9, pg- 850
5. Sushruta, Sushruta Samhita, Edited by Vaidya Acharya Yadavji Trikamji and Kavyatita Acharya Narayan Ram, Chaukhambha Orientalia, Varanasi, VIII Edi. 2005, Nidansthan, kusthanidan chapter, verse 3, pg - 282
6. Agnivesha, Charaka Samhitha, Edited by Vaidya Acharya Yadavji Trikamji, Chaukhambha Prakashan, Varanasi, Reprint 2007, sutrasthan, yajjhapurushiya chapter, verse 40, pg- 131
7. Bhavamishra, Bhavprakasha Nighantu, Vidhyotini commentary, edited by Brahmsankar Mishra and Ruplalji Vaishya, Chaukhambha Sanskrit Sansthan, Varanasi, reprint 2002, Haritakyadi Varga, verse 43, page 12
8. Sushruta, Sushruta Samhita, Edited by Vaidya Acharya Yadavji Trikamji and Kavyatita Acharya Narayan Ram, Chaukhambha Orientalia, Varanasi, VIII Edi. 2005, Chikitsa sthan, kustha Chikitsa chapter, verse 43, pg -446
9. Bhavamishra, Bhavprakasha Nighantu, Vidhyotini commentary, edited by Brahmsankar Mishra and Ruplalji Vaishya, Chaukhambha Sanskrit Sansthan,

- Varanasi, reprint 2002, Guduchyadi Varga, verse 94, page 328
10. Bhavamishra, Bhavprakasha Nighantu, Vidhyotini commentary, edited by Brahmsankar Mishra and Ruplalji Vaishya, Chaukhambha Sanskrit Sansthan, Varanasi, reprint 2002, Guduchyadi Varga, verse 90, page 320
11. Sharangdhara, Sharangdhara Samhita, Jivanprada hindi commentary, edited by smt. Shailaja shrivastava, chaukhambha Orientalia, Varanasi, reprint 2011, Madhyama Khanda, 9th chapter, verse 2, page 215
12. Anonymous 4, Govt. of India. The Ayurvedic Pharmacopoeia of India. 1st edition, part II, The Controller of publications, New Delhi; 2006; Vol.II, Appendix -03:212.
13. Agnivesha, Charaka Samhitha, Edited by Vaidya Acharya Yadavji Trikamji, Chaukhambha Prakashan, Varanasi, Reprint 2007, vimanasthan , rasavimana chapter , verse 21(2), pg- 235
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