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 Kushta Vyadhi (skin diseases), Visarp Roga (erysipelous) and Masoorika (type of measels) and it is mentioned in Sangrah Grantha like, Yogaratnakara, Gadanighraha, Bhaisajya 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 Rakta 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, Kushta, 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 Brihattrayee have in detail explanation of Kushta Vyadhi and its treatment. Later on, during Sangrahakala various Acharya compiled effective and clinically proven formulations for various diseases. Khadirashtaka Kashaya is mentioned in Yogaratnakara, Gadanighraha, Bhaisajya Ratnavali with different contexts of indication i.e. Kushtha¹, Visarpa² and Masoorika³ respectively. All three disease have presentations on skin. Kushtha and Visarpa diseases have common etiological factors mentioned as Saptak Dravyasangraha in Charak Samhita⁴. 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 Khadir, Haritaki, Bibhitaki, Aamalaki, Nimba, Patola, Guduchi and Vasa. Khadirashtaka Kashaya helps to break the pathogenesis by its Tikta Kashaya Rasa, Anushna Virya, Madhura Vipaka, Raksha, Laghu Guna, as well as blood purifying activity. Khadir is mentioned as best Kushtaghna⁶, Triphala is also said for treatment of Kushta⁷. It has Anuloman property which helps to purify body by regular bowel excretion. Regular Virechana is mentioned in skin disorders.⁸ Nimba⁹ and Vasa¹⁰ also mentioned having Kushtaghna properties. So, the combination exclusively becomes drug of choice in the treatment of Kushta (skin disorders). The present work was carried out to evaluate and compare pharmacognostical aspects of Khadirashtaka powder (Yavkat 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

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TABLE 1: Composition of Khadirashtaka Kashaya.

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

TABLE 2: Organoleptic characters Khadirashtaka yavkuta Churna and Khadirashtaka Kwatha.

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

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 Pharmacognospy 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 (decocation) was carried out. Decoction was made by classical method of Kwatha Preparation. 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 microscope.

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, scleroid 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 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 Mahabhub causes Paka Prakriya which may result in structural modification. Agnisannikarsha (exposure of heat) is said one of the Sanskara which has potency to Gunantaradhana. 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 Mahabhub 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. Rossette crystal of *Bibhitaki*
6. Trichome of *Vasa*
7. Trichome of *Bibhitaki*
8. Brown content of *Khadira*
9. Oil globule of \textit{Nimba} \\
10 Stone cell of \textit{Haritaki} \\
11 Stone cell of \textit{Bibhitaki} \\
12 Starch grain of \textit{Guduchi} \\
13 Simple fiber of Khadira along with tennin \\
14 Crystal fiber of \textit{Nimba} \\
15 Cork cells of \textit{Guduchi} \\
16 Lignified border pitted vessel of \textit{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: Cholenchyma cells of Guduchi
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, Yogratnakara, Chaukhambha Krishnadas Academy, Varanasi, reprint 2011, Kustha Nidana Chikitsa Prakrana, verse 63, page 648
4. Agnivesha, Charaka Samhitha, Edited by Vaidya Acharya Yadavji Trikamji, Chaukhambha Prakashan, Varanasi, Reprint 2007, chikitsasthan , Kustha Chikitsa, verse 9, pg- 850
9. Bhavamishra, Bhavyprakasha Nighantu, Vidhyotini commentary, edited by Brahmsankar Mishra and Rupalji Vaishya, Chaukhambha Sanskrit Sansthan,