A PRELIMINARY PHYSICO CHEMICAL ASSAY OF APAMARGA KSHARA TAILA – A PILOT STUDY

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ABSTRACT

Ayurveda is literally known as science of life. Several number of medicines are explained in Ayurveda to cure the diseases. Sharangadhara in Madhya Khand, 9th chapter, 174th Shloka explained the preparation of Kshara Taila, which is indicated in Karna rogas like Puya Srava, Karna Nada, Karna Shoola, Badhirya, Krimi Karma and other diseases of ear and mouth also. On the other hand Apamarga Kshara is well known drug for treating the Arsha. An innovative thought to treat Arsha with a simple procedure like Basti made to combine the Apamarga Kshara in the preparation of Kshara Taila. Before clinical study the pharmacognostical and pharmaceutical analysis of the drug was done. The presence of starch grains, trichome, lignified parenchyma, prismatic crystals, stone cells and oleo resin increases the absorption of mucosa. Refractive index of Apamarga Kshara Taila was found 147.45 at 40\degree C, specific gravity 0.9236 at 25\degree C, iodine value 67.59, saponification value 105.04 and the pH value of Apamarga Kshara Taila found 5.

Keywords: Ayurveda, Apamarga Kshara Taila, Arsha, Pharmacognosy, Pharmaceutical.

INTRODUCTION

Arsha (haemorrhoids), amongst the Ano-rectal disorders has taken a vital place having the prevalence rate in general practice in SW London was 34.8% in males and 37.2% in females, where as in hospital practice 78.9% in males and 29.5% in females\[1\]. Aetio-pathological factors like vitiation of Tridoshas (3-humors) in Guda (anal canal), riding of horse, vehicles, sitting on irregular surface, prolong sitting, etc., are responsible for the formation of Arsha. Internal piles have traditionally been regarded as essentially varicosities of the venous plexuses in the wall of the anal canal and lowermost centimetre or so of the rectum. These form swellings covered with mucosa, which bulge into the lumen of the anal canal\[2\]. Arsha has been described under “Asth Maharogas”\[3\] (eight major diseases) which tortures the person like enemy\[4\]. Arsha has been known in
Ayurveda with different names like Durnama\textsuperscript{[5]}, Durnamaka, Guda keela, Gudankura, Guda, Guda praroha, Gudavali praroha, Anamaka, Payuroga, Mamsankura and Mamsa praroha\textsuperscript{[6]}. Provocated Doshas either single or in combined form including Rakta (blood), dislodges from their normal seats and reaches the Pradhana Dhamani (major blood vessels) of Guda and causes vitiation of Guda and manifests Mamsa praroha. Irritation of Guda by Trina, Kashta, Upala, Losta, etc., especially in Mandagni person leads to further aggravation of Arsha\textsuperscript{[7]}. Considering the site of rectum and anal canal, there are 3 types - internal, external and intero-external haemorrhoids\textsuperscript{[8]} posing 1\textsuperscript{st}, 2\textsuperscript{nd}, 3\textsuperscript{rd} & 4\textsuperscript{th} degree\textsuperscript{[9]}.

Treatment modalities for this manifestation explained in Ayurveda are Bhashaja karma (conservative treatment), Shashtra karma (surgical treatment), Kshara karma (PCA-therapy) and Agni karma\textsuperscript{[10]} (DCA-therapy). Though surgery is indicated as main treatment procedure, scholar tried to simplify the procedure by giving Basti of Apamarga Kshara Taila which is considered as conservative treatment. In addition, Ayurvedic methods of treatment have an upper hand, over modern system of medicine, considering which many of the sufferers prefers to undergo Ayurvedic treatment. Under Bhashaja karma, a number of drugs have been mentioned in Ayurvedic classics. The current drug Apamarga Kshara Taila was selected first time in world for the treatment of Arsha and the formulation composition of which is depicted in table number-1.

MATERIALS & METHODS

Plant material

The raw drug materials were collected from the pharmacy department, IPGT & RA, GAU, Jamnagar.

Pharmacognostical study\textsuperscript{[11, 12, 13]}

The raw drugs are identified and authentified and powder microscopy was done in the pharmacognosy department, IPGT & RA, GAU, Jamnagar. The study includes organoleptic evaluation and microscopic evaluation.

\textbf{a) Organoleptic evaluation}

The colour, odour, and taste of the individual powder were recorded separately.

\textbf{b) Microscopic evaluation}
The powdered raw drugs were separately studied under microscope, the diagnostic characters were drawn with camera Lucida and also took microphotographs by using Carl Zeiss binocular microscope.

**Method of preparation of Apamarga Kshara Taila.**

The drugs enlisted in the table number 1 were taken and *Apamarga Kshara Taila* was prepared as per classics.

- **Kalka dravyas** - 3 Kshara (*Yava kshara, Sarja kshara, Apamarga kshara*)
  - *Panchalavana* each 19gm
  - Drugs from Sl. No. 4 to 13 (Fine powder)

- **Drava dravyas** - *Kadali kanda swarasa*
  - *Nimbu swarasa* each 1.2lit

- **Tila taila** - 1.2lit

- **Madhu Shukta** - 4.8lit (Table No.-2)

**Pharmaceutical evaluation:**

The study was done in the pharmaceutical department, IPGT & RA, GAU, Jamnagar. Pharmaceutical evaluation includes physical evaluation. Results are as shown in the table - 4.

**Physical evaluation:**

In physical evaluation, refractive index, specific gravity, acid value, iodine value and saponification values are studied as per API standards. Extracts obtained by exhausting crude drugs are indicative of approximate measures of certain chemical compounds they contain, the diversity in chemical nature and properties of contents of drug. The determinations were performed in triplicate and results are expressed as mean ± SD. The percentage w/w values were calculated with reference to the air-dried drug.

**RESULTS & DISCUSSION**

The individual raw drugs were separately powdered at 60 number mesh. The organoleptic characters are viz, colour, taste, odour and touch are recorded separately and are depleted table - 3.
Powder microscopy:

The individual powered drug are first examined under distilled water for the observation of calcium oxalate crystals and other cellular materials, then stained with Phloroglucinal and conc. HCl for the lignified characters, like stone cells, lignified fibre, etc., then stained with iodine to observe the starch grains. The diagnostic microscopical characters of individual powder are, rosette crystals of calcium oxalate, lignified fibres, starch grains, etc., the characters were recorded and took microphotographs by using Carl Zeiss binocular microscope attached with camera which are shown in Plate No. (1-10).

Pharmaceutical evaluation:

Organoleptic characters of *Apamarga Kshara Taila*.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Characters</th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Colour</td>
<td>Light Brownish</td>
</tr>
<tr>
<td>2</td>
<td>Odour</td>
<td>Agreeable</td>
</tr>
<tr>
<td>3</td>
<td>Taste</td>
<td>Saline</td>
</tr>
</tbody>
</table>

Physico-chemical parameters-Preliminary Phytochemical Evaluation.

The various physical parameters of *Apamarga Kshara Taila* show that the acid value is 5 and iodine value is 67.59 and other parameters are conducted as per API. The values are obtained by triplet method. The obtained values are depleted in the table number - 4.

The pharmacognostical studies revels that the presence of starch grains, trichomes, lignified parenchyma, prismatic crystals, stone cells and oleo resin. The observed characters are vary commonly observed in all powdered drugs and are responsible for increase in the absorption of mucosa. The pharmaceutical studies shows that the refractive index 147.45 at 40°C, specific gravity 0.9236 at 25°C, acid value 5, iodine value 67.59 and saponification value 105.4. By these values it is observed that *Apamarga Kshara Taila* is acidic in nature. Due to its acidic nature it will burns the soft tissues. Presence of other drugs will helps in the wound healing. This will helps in the reduction of pile mass and ultimately cures the disease.
### TABLE 1: APAMARGA KSHARA TAILA

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>DRUGS USED</th>
<th>BOTANICAL NAME (FAMILY)</th>
<th>PART USED</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>APAMARGA KSHARA</td>
<td>Achyranthes aspera Linn. (Amaranthaceae)</td>
<td>Whole plant</td>
<td>19gm</td>
</tr>
<tr>
<td>2</td>
<td>KADALIKANDA SWARASA</td>
<td>Musa paradisiaca Linn. (Musaceae)</td>
<td>Rhizome</td>
<td>1.2 lit</td>
</tr>
<tr>
<td>3</td>
<td>NIMBUKA/BEEJAPURA</td>
<td>Citrus limon (Linn.) (Rutaceae)</td>
<td>Swarasa</td>
<td>1.2 lit</td>
</tr>
<tr>
<td>4</td>
<td>HINGU</td>
<td>Ferula foetida Regel. (Umbelliferae)</td>
<td>Oleo-gum-Resin</td>
<td>19 gm</td>
</tr>
<tr>
<td>5</td>
<td>SHIGRU</td>
<td>Moringa oleifera Lam. (Moringaceae)</td>
<td>Leaves</td>
<td>19gm</td>
</tr>
<tr>
<td>6</td>
<td>SHUNTI</td>
<td>Zingiber officinale Roxb. (Zingiberaceae)</td>
<td>Rhizome</td>
<td>19gm</td>
</tr>
<tr>
<td>7</td>
<td>DEVADARU</td>
<td>Cedrus deodara (Roxb.) Loud. (Pinaceae)</td>
<td>Heart wood</td>
<td>19gm</td>
</tr>
<tr>
<td>8</td>
<td>VACHA</td>
<td>Acorus calamus Linn. (Araceae)</td>
<td>Rhizome</td>
<td>19gm</td>
</tr>
<tr>
<td>9</td>
<td>KUSHTA</td>
<td>Saussurea lappa C.B.Clarke (Compositae)</td>
<td>Root</td>
<td>19gm</td>
</tr>
<tr>
<td>10</td>
<td>SHATAPUSHPA</td>
<td>Anethum sowa Roxb. (Apiaceae)</td>
<td>Fruit</td>
<td>19gm</td>
</tr>
<tr>
<td>11</td>
<td>RASANJANA</td>
<td>Berberis aristata DC. (Berberidaceae)</td>
<td>Stem</td>
<td>19gm</td>
</tr>
<tr>
<td>12</td>
<td>PIPPALI MOOLA</td>
<td>Piper longum Linn. (Piperaceae)</td>
<td>Root</td>
<td>19gm</td>
</tr>
<tr>
<td>13</td>
<td>MUSTA</td>
<td>Cyperus rotundus Linn. (Cyperaceae)</td>
<td>Rhizome</td>
<td>19gm</td>
</tr>
<tr>
<td>14</td>
<td>MADHU</td>
<td></td>
<td></td>
<td>4.8 lit</td>
</tr>
<tr>
<td>15</td>
<td>SHUKTA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>YAVAKSHARA</td>
<td>Mixture of Potassium Salts</td>
<td></td>
<td>19gm</td>
</tr>
<tr>
<td>17</td>
<td>SARJAKSHARA</td>
<td></td>
<td></td>
<td>19gm</td>
</tr>
<tr>
<td>18</td>
<td>PANCHALAVANA</td>
<td></td>
<td></td>
<td>19 gm Each</td>
</tr>
<tr>
<td>19</td>
<td>TILA TAILA</td>
<td></td>
<td></td>
<td>1.2 lit</td>
</tr>
</tbody>
</table>

### TABLE 2: MADHUSHUKTA

<table>
<thead>
<tr>
<th>SL. NO.</th>
<th>DRUGS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nimbu swarasa</td>
<td>5.5 lit</td>
</tr>
<tr>
<td>2</td>
<td>Makshika (Madhu)</td>
<td>1.5 lit</td>
</tr>
<tr>
<td>3</td>
<td>Pippali choorna</td>
<td>350 gm</td>
</tr>
<tr>
<td>Si. No.</td>
<td>Drug</td>
<td>Colour</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------</td>
<td>--------------------</td>
</tr>
</tbody>
</table>
| 1      | Apamarga        | Yellowish brown    | Bitter  | Not distinct | Fine             | 1) Fiber  
2) Parenchyma  
3) Unicellular  
4) Trichome  
5) Rosette crystals  
6) Annular vessels |
| 2      | Kadalikanda Swarasa | - - - -   | -       | -         | -               | -                                                                                                   |
| 3      | Nimbuka         | - - - - -             | -       | -         | -               | -                                                                                                   |
| 4      | Hingu           | - - - - -             | -       | -         | -               | -                                                                                                   |
| 5      | Shigru          | Greenish-grey to pale green | Not distinct | Not distinct | Fine             | 1) Epidermal cells  
2) Rosette crystals  
3) Spongy Parenchymatous  
4) Spiral vessels  
5) Stomata  
6) Trichome |
| 6      | Shunti          | Yellow              | Pungent | Aromatic  | Fine             | 1) Oleo resins  
2) Parenchymatous cells  
3) Spiral & Annular vessels  
4) Starch grains  
5) Trichome |
| 7      | Devadaru        | Brownish yellow     | Not distinct | Aromatic  | Fine             | 1) Lignified parenchyma  
2) Prismatic crystals  
3) Stone cells |
| 8      | Vacha           | Buff coloured       | Pungent and bitter | Aromatic  | Fine             | 1) Annular vessels  
2) Oleo resin  
3) Fiber  
4) Parenchymatous  
5) Starch grains |
| 9      | Kushta          | Deep brown or rusty | Slightly bitter | Strong   | Fine             | 1) Cork cells  
2) Endothelial cells  
3) Oleo resins  
4) Scleriform xylem vessels  
5) Reticulate vessels  
6) Xylem fiber  
7) Phloem fiber |
| 10     | Shatapushpa     | Brown               | Bitter  | Aromatic  | Fine             | 1) Epidermal cells  
2) Lignified fiber  
3) Lignified Parenchymatous  
4) Oil globules  
5) Prismatic crystals |
| 11     | Rasanjana       | Yellowish brown     | Bitter  | None      | Fine             | 1) Lignified fiber  
2) Lignified parenchyma |
TABLE 4: PHARMACEUTICAL EVALUATION

<table>
<thead>
<tr>
<th>Si. No.</th>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Refractive index</td>
<td>147.45 at 40°C</td>
</tr>
<tr>
<td>2</td>
<td>Specific gravity</td>
<td>0.9236 at 25°C</td>
</tr>
<tr>
<td>3</td>
<td>Acid value</td>
<td>5.00</td>
</tr>
<tr>
<td>4</td>
<td>Iodine value</td>
<td>67.59</td>
</tr>
<tr>
<td>5</td>
<td>Saponification value</td>
<td>105.04</td>
</tr>
</tbody>
</table>

Plate No. – 1 (Apamarga Kshara)  
Plate No. – 2 (Daruharidra)
CONCLUSION

Ayurveda is known as Upaveda of Atharva veda. It tells that the “Prevention is better than cure”. Along with this it explains various diseases and its treatment. Among them Arsha is considered as one of the Asthamaharogas. Both conservative and surgical procedures are explained for the treatment of Arsha. Apamarga Kshara is well known drug in treating Arsha. Sharangadhara in Madhyama Khanda, 9/174, explained the preparation of Kshara Taila which is indicated in Karna Rogas. For the first time Apamarga Kshara is mixed with the preparation of Kshara Taila. The obtained pharmacognostical and pharmaceutical values are helps in the reduction of pile mass by scraping & healing effect. This is taken for the treatment of Arsha as clinical study. The results are being reporting for the first time, could be useful in the identification and standardization of Apamarga Kshara Taila. The data produced in the present investigation is also helpful in the inclusion in various pharmacopoeias.

ACKNOWLEDGEMENT

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