

Physicochemical analysis of Ayurvedic Formulation Saindhavadi tailam (w.s.r to Charak Samhita Yonivyapad Chikitsa)

¹Dr. Payal P. Wavhal, ²Dr. Amol H. Waghmare, ³Dr. Arati Dubewar

¹PG Scholar MD (Ayu) ²Associate Professor, ³Head of the Department

^{1,2,3} Department of Rasashastra Evum Bhaishajyakalpana

^{1,2,3} Dr. D.Y.Patil University(DPU)'s Dr. D. Y. Patil College of Ayurveda and Research Centre, Pimpri, Pune, India
¹vdpayalwavhal@gmail.com ²dramol202@gmail.com ³aratidubewar@gmail.com

Abstract: Saindhavadi tailam is an oil-based formulation described in charak samhita's yonivyapad chikitsa. It has been described for the treatment of "yoni ruja" (vaginal pain). Vaginal pain is a cardinal symptom of many kinds of gynaecological problems like vulvovaginitis, dyspareunia, etc. In Ayurveda classics, yoni ruja or yonishool is a symptom of various yonivyapadas like vataja yonivyapad, etc. Management of these symptoms can be difficult with only systemic anti-inflammatory drugs and analgesics. Hence, a local treatment with targeted medicines to treat the root cause becomes essential to relieve the pain. Saindhavadi Tailam is one such formulation however, there is no data available for its standardization. In this article, this formulation has been reviewed and analyzed to help understand the physicochemical properties and standardization of the same. The values were well within the reference range of standard ayurvedic oil preparations. Also, there was minimal batch-to-batch variation in observed value. Hence these values can be held as a standard reference for the preparation and quality control of saindhavadi tailam.

Key Words: Saindhavadi tailam, Standardization, Yonivyapad, Yoni Ruja, Yonishool, Vaginal Pain.

1. INTRODUCTION:

Charak Samhita includes a specific part of the classic- yonivyapada chikitsa- wherein the various pathologies of the female genital tract known as yonivyapad have been discussed in great detail, along with their treatment methods [1]. A total of 20 such yonivyapadas have been described, the cause of each being some or the other form of dosha vitiation due to many factors [2]. The manifestations include an array of symptoms- of which, vaginal pain, swelling and discharge are most commonly noted. Amongst these, vaginal pain is seen primarily due to the vitiation of vaata and adjuvant vitiation of kapha dosha [1,2].

Yoni Ruja or Yonishool is described as a symptom in various yonivyapadas viz. Vaataja, Kaphaja, Tridoshaja, Aticharana, Paripluta, Udavartini and Mahayoni. The root cause in all of these conditions is vitiation of vaata along with involvement of other doshas and dhatus. The use of oils prepared using lavana (salt) as general treatment of the yonivyapada caused by vitiation of vaata has been described in Charak Samhita among other treatments [3].

Saindhavadi tailam is one such preparation and can be used to relieve vaginal pain caused by any of these causes [4]. Saindhavadi Tailam is prepared in a base of Sesame oil [5] with ingredients viz. Saindhava [6] (rock salt/bay salt), Tagara [7] (Valeriana wallichii), Kushtha [8] (Saussurea lappa), Brihati [9] (Solanum indicum), Devadaru [10] (Cederus deodar). It has been described to have pain-relieving properties when used locally in vaginal passage as pichu (locally placed gauze soaked with medicine) [4]. Even though this is a proven, beneficial and widely used preparation, physicochemical analysis still remains an unexplored issue for it. The physicochemical analysis and standardization of this oil is necessary to control the quality of the product, so as to ensure safety & best results upon use.

2. LITERATURE REVIEW:

Pertinent literature regarding saindhavadi tailam in Ayurveda classics and textbooks was reviewed. Specific reference was found only in Charak Samhita. The properties of the ingredients were reviewed in dravyaguna textbooks and classic texts. No research work on study or standardization of saindhavadi tailam was found.

3. MATERIALS:

For preparation of Saindhavadi Tailam: The preparation was carried out in 3 batches
Materials for each batch-

Name of Material	Quantity
Saindhava Lavana	5 gm
Tagara	5 gm
Kushtha	5 gm
Brihati	5 gm
Devadaru	5 gm

Sesame Oil	100 ml
Water	400 ml

4. METHOD:

4.1. Method of preparation of oil:

Market samples of the all the ingredients were procured from GMP certified pharmacy. The solid materials were weighed and taken together on a grinding stone. The powders were mixed together and a *kalka*^[11] (ground paste) was formed using water q.s. This paste was then transferred into a vessel containing the oil for preparation and was left in the oil for 24 hours to soak. After 24 hours, water was mixed to the oil and paste and placed on medium heat until all the water was completely evaporated and the oil was seen boiling with *phenodgama* (a mild amount of clear lather)^[12]. *Agnipariskhan*^[13] (paper-rider test) was done by soaking a small piece of rolled paper in oil and burning it on the flame. Upon satisfactory observations, the oil was then taken down from the heat, strained using filter paper and stored for further analysis. *Kalkaparikshan*^[14] of the remaining filtrate was also done.

4.2. Physicochemical analysis

The following physicochemical tests were conducted

- pH value-by standard calibrated pH meter
- Specific gravity- by Pycnometer method
- Viscosity- by Brookfield Viscometer
- Refractive index- by Abbe’s Refractometer
- Acid value- By titration method
- Saponification value- by titration method
- Rancidity- By titration method

5. DISCUSSION:

Saindhavadi tailam has been described under the *adhikara* (subsection) of *vaataja yonivyapada chikitsa*. The reference clearly specifies that the oil is meant for the relief of *Yoni Ruja* i.e vaginal pain by local application. This implies that it is basically a symptomatic relief and will also require use of a combination of medicines according to the underlying condition. The *chikitsa sutra* i.e general guidelines for treatment of *vaataja yonivyapada* include “*aaktam lavantailam*” i.e local application of oils made using salt^[3]. This oil is one such preparation where *saindhava lavan* has been used along with other herbs which have pain relieving properties.

Saindhava is known to pacify all vitiated *doshas*. *Tagara* pacifies *vaata-kapha*, has property of *vedanasthapana* (pain-reliever). *Kushtha* pacifies *vaata* and *kapha* and has property of *vedanasthapana*. *Brihati* pacifies *vaata* and *kapha*, has property of *vedanasthapana*, purifies blood and is *kandughna* (relieves itching). *Devadaru* pacifies *vaata* and *kapha*, has *shothahar* (reduces edema) property and also has property of *vedanasthapana*. Sesame Oil also pacifies *vaata* and does not vitiate cough. Along with these properties, an oil-based formulation is easy and suitable for local application. Relevance of the contents in mode of action.

Ingredient	Properties	Relevant Actions
<i>Saindhava</i>	<i>Lavana, Sheeta Sukshma</i>	Pacifies all 3 vitiated doshas
<i>Tagara</i>	<i>Tikta-Katu-Kashaya, Katu, Ushna, Laghu, Snigdha</i>	Pacifies <i>Vaata</i> and <i>Kapha</i> , <i>Vedanasthapana</i> (pain reliever), <i>Vranropan</i> (wound-healing)
<i>Kushtha</i>	<i>Tikta-Katu-Madhur, Katu, Ushna, Laghu, Ruksha, Teekshna</i>	Pacifies <i>Vaata</i> and <i>Kapha</i> , <i>Vedanasthapana</i> (pain reliever)
<i>Brihati</i>	<i>Katu-Tikta, Katu, Ushna, Laghu, Ruksha, Teekshna</i>	Pacifies <i>Vaata</i> and <i>Kapha</i> , <i>Vedanasthapana</i> (pain-reliever), Purifies blood, <i>kandughna</i> relieves itching
<i>Devadaru</i>	<i>Tikta, Katu, Ushna, Laghu, Snigdha</i>	Pacifies <i>Vaata</i> and <i>Kapha</i> , <i>Shothahar</i> (reduces edema), <i>Vedanasthapana</i> (pain-reliever)
Sesame Oil	<i>Teekshna, Vyavayi, Sukshma</i>	Pacifies <i>Vaata</i> , does not vitiate <i>kapha</i>

Table 4

As per *Sharangadhar Samhita*, oil formulations should not be processed in a single day^[15]. During preparation, the ground paste of ingredients was soaked in the oil for 24 hours in order to let the active principles remain exposed to the oil for a longer period of time. This ensures better concentration of the ingredients being absorbed in the oil.^[15]

The heat for the preparation of oil was kept at medium and then on low once it was boiling to ensure that the paste does not get burnt and stick to the base of the vessel in the process. When all the water content was evaporated,

the oil began to boil with *phena* (clear lather) on its surface^[12]. At this time, *Agniparikshan*^[13] was done by taking a small piece of paper which was soaked in the oil and then burned on the flame. The paper burnt with crackling noise when the moisture content was still present. The test was repeated a few times with new pieces of paper until the paper was burning without any noise. This was to ensure that there is no remnant moisture in the oil. If all the moisture content is not removed, there is chance of microbial growth in the formulation. At the end of the heating process, once the oil was filtered out, the *kalkapariskhan*^[14] was done by examining the filtrate paste. It was smoother than initial consistency and could be molded into a roll easily. The roll did not fall apart until broken with the fingers. This indicated *madhyama paaka* of the oil^[16]. *Madhyama paaka* has been described as suitable for all types of uses including external by *Sharangdhara*^[17]. On physicochemical analysis, it was observed that the oil was viscous and fluid, immiscible with water, had an oily pungent smell and as pungent-bitter in taste^[Table 2]. The taste and smell may be attributed to herbal ingredients that were used in preparation. The pH was found to be almost neutral, at 7.30^[Table 3] being just slightly alkaline in nature. This can be related with the vaginal canal already being moderately acidic and hence an acidic or alkaline preparation would cause an imbalance in the homeostasis. The refractive index was found to be 1.6^[Table 3] which can be used as a reference to rule out any adulteration in future preparations. The specific gravity^[Table 3] was found to be 1.03. The viscosity^[Table 3] was found to be 5.25, which can be used as a standard to identify adulteration, as well as to rule out presence of water content. The acid value^[Table 3] was found to be 0.22 which indicates that the oil is of good quality and has long shelf-life. The saponification value^[Table 3] was found to be 188.34 which indicated that the oil is suitable for preparations like soaps. The oil was found to be non-rancid and indicated a long shelf-life.

6. ANALYSIS:

The preparation was analysed on the basis of following parameters

1) In-process

- a) Time taken for preparation
- b) *Agniparikshan*
- c) *Kalkaparikshan*
- d) Yield

2) Final prepared formulation

- a) organoleptic properties viz.-
colour, odour, smell, taste
- a) Physicochemical properties viz.-
pH, refractive index, specific gravity, viscosity, acid value, saponification value and rancidity.

7. FINDINGS: Following observations and *snehapaka siddhi lakshanas* (tests for ideal *snehapaka*) were noted

Observation criteria	Batch S1	Batch S2	Batch S3
Time taken for preparation (100ml oil)	1 hour 15 minutes	1 hour 18 minutes	1 hour 10 minutes
<i>Agniparikshan</i> ^[13] Paper rider test	Oil-Soaked paper burns without any noise when placed on fire.	Oil-Soaked paper burns without any noise when placed on fire.	Oil-Soaked paper burns without any noise when placed on fire.
<i>Kalka Pariksha</i> ^[14] Consistency of paste post preparation	Can be molded between fingers into a roll	Can be molded between fingers into a roll	Can be molded between fingers into a roll
Obtained Quantity	59ml	69ml	63ml

Table 1

Organoleptic properties

Properties observed	S1	S2	S3
Color	Dark Yellow/ Mustard	Dark Yellow/ Mustard	Dark Yellow/ Mustard
Taste	Pungent, Bitter	Pungent, Bitter	Pungent, Bitter
Smell	Strong, Pungent	Strong, Pungent	Strong, Pungent
Touch	Oily, sticky consistency	Oily, Sticky consistency	Oily, sticky consistency

Table 2

Physicochemical Properties

Test	S1	S2	S3	Average
pH	7.33	7.24	7.35	7.30
Refractive Index	1.6244	1.6038	1.6346	1.6209
Specific Gravity	1.03	1.03	1.03	1.03
Viscosity	5.26	5.25	5.26	5.25
Acid Value	0.22	0.21	0.24	0.22
Saponification	188.36	188.12	188.56	188.34

Table 3

Photographs of observations made:



Image 1



Image 2



Image 3



Image 4



Image 5



Image 6

Images of observations made- 1) Ingredients weighed separately 2) *Kalka* preparation (ground paste) 3) *Phenodgama* 4) *Kalkaparikshan* 5) *Agniparikshan* 6) Prepared *Saindhavadi Tailam*

7. RESULT:

The physicochemical analysis of *Saindhavadi tailam* showed the aforementioned properties^[Table 1,2,3]. The average observed values were pH 7.30, refractive index 1.6209, specific gravity 5.25, viscosity 0.22, acid value 0.22, saponification value 188.34 and no rancidity.

8. CONCLUSION:

Saindhavadi tailam prepared by classical method showed minimal batch to batch variation. Thus the physicochemical observations found in this study can be used as a reference for standardization of *Saindhavadi Tailam* in the future.

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES:

1. Shukla, V. (2014). *Yonivyapada Chikitsa, Charak Samhita* (pp.739). Delhi, India: Charak Sanskrut Pratishthan.
2. Shukla, V. (2014). *Yonivyapada Chikitsa, Charak Samhita* (pp.739). Delhi, India: Charak Sanskrut Pratishthan.
3. Shukla, V. (2014). *Yonivyapada Chikitsa, Charak Samhita* (pp.746). Delhi, India: Charak Sanskrut Pratishthan.
4. Shukla, V. (2014). *Yonivyapada Chikitsa, Charak Samhita* (pp.748). Delhi, India: Charak Sanskrut Pratishthan.
5. Khushwaha, H. (2011). Chapter, *Charak Samhita* (pp.454). Varanasi, India: Chaukhamba Orientalia

6. Mishra, B. Vaisya, R. (2002). Haritakyadi Varga, *Bhavaprakasha Nighantu* (pp.154). Varanasi, India: Chaukhamba Sanskrit Sansthan.
7. Sharma,P. (2009). Chapter 1, *Dravyaguna Part 2* (pp.64). Varanasi,India: Chaukhamba Bharti Akadami.
8. Sharma,P. (2009). Chapter 7, *Dravyaguna Part 2* (pp.574). Varanasi,India: Chaukhamba Bharti Akadami.
9. Sharma,P. (2009). Chapter 4, *Dravyaguna Part 2* (pp.282). Varanasi,India: Chaukhamba Bharti Akadami.
10. Sharma,P. (2009). Chapter 1, *Dravyaguna Part 2* (pp.76). Varanasi,India: Chaukhamba Bharti Akadami.
11. Tripathi, B. (2020). Kalkakalpana, *Sharangadhara Samhita* (pp.112). Varanasi, India: Chaukhambha Surabharati Prakashan.
12. Tripathi, B. (2020). Ghritatailakalpana, *Sharangadhara Samhita* (pp.145). Varanasi, India: Chaukhambha Surabharati Prakashan.
13. Tripathi, B. (2020). Ghritatailakalpana, *Sharangadhara Samhita* (pp.146). Varanasi, India: Chaukhambha Surabharati Prakashan.