World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 4.223

PHARMACEUTICO ANALYTICAL STUDY OF ARKA TAILA WITH TWO DIFFERENT RATIOS

Dr. Kishore Seetarama D.[1]* and Hussain Gazala[2]

[1]M.D. (Ayu). Rasa shastra and bhaishajya kalpana.
[2]Associate Professor Department of Agada Tantra and Vidhi Vaidyak, SDMCA Hassan, Karnataka, India.

***Corresponding Author: Dr. Kishore Seetarama D.**
M.D. (Ayu). Rasa shastra and bhaishajya kalpana.

Article Received on 21/04/2017 **Article Revised on 10/05/2017** **Article Accepted on 01/06/2017**

ABSTRACT

Back ground: Skin diseases comprise a large proportion of patients approaching clinics and hospitals. Arka taila is an Ayurvedic preparation for *kandu* (itching), *pama* (scabies), *vicharchika* (eczema). It is mentioned in various classical books of *Ayurveda* like *Sharangadhara samhita*, *vangasena samhita* etc. **Aim:** To evaluate the pharmaceutical and analytical parameters of Arka taila prepared with two different ratios. **Materials and methods:** Arka Taila was prepared with two different ratios of Kalka dravyas. Snehapaka was subjected according to the rule of sneha kalpana when swarasa is a dravadravya i.e in ratio of 1/8th part *Kalka* (fine paste of haridra), 1 part of *Katu taila* (Mustard oil) and 4 parts of Arka patra swarasa to that of *kalka.* And a specified ratio of kalka as 1/4th part is mentioned in gudartha deepika is also considered in the present study. They were subjected to paka until the sneha *siddha laksanas* were obtained. After completion of taila paka they were subjected for organoleptic analysis as mentioned in CCRAS. **Result:** Pharmaceutically Sample A (1/8th kalka) has better yield; Analytical parameters like Refractive index, Saponification value, Acid value, Specific gravity and Viscosity has better values and more compliant than Sample B (1/4th kalka). **Conclusion:** Both Pharmaceutical and analytical study carried out on Arka taila with two different ratios has shown that Sample A (1/8th kalka) with more yield of the taila, and the analytical parameters like Refractive index, Saponification value, specific gravity shown better results in decreasing rancidity and increasing Stability compared to Sample B (1/4th kalka) This paper highlights the Pharmaceutico analytical study of *Arka taila* prepared in two different ratios.

KEYWORDS: *Arka taila*, *Ayurveda*, Skin disease, gudartha deepika, organoleptic charecters.

INTRODUCTION

In Ayurveda pharmaceutics, Panchavidha kashaya kalpanas are considered as fundamental preparations. In addition to these there are preparations like Avalehya, Sneha, Vati, Sandhana kalpana, etc are mentioned in classics that add to the vast compendium of formulations that have more shelf life. There are different dosage forms which are introduced to attain the better therapeutic efficacy to increase palatability, potency, shelf life. In these Sneha kalpana is in use from Vedic period. It is a kalpana that is used for both internal and external administration for treatment with a wider therapeutic application. It is a process by which extraction of both water soluble and Lipid soluble active principles can be done. It is a procedure where different Samskaras are incorporated as Jala samskara, Agni samskara, etc. *Sneha* is the essence (*sara*) of the body. It has been given prime importance in treating diseases as; it can be processed to mitigate all the three *dosha* by the use of different processing techniques and by varying the ingredients. Taila kalpana is widely used for external administration in skin diseases in which Arka taila is one of the classical and potent taila indicated for vicharchika, kandu and pama,[1] with simple ingredients like Arka patra, Haridra and Sarshapa taila. As per general rule of sneha kalpana if swarasa is drava dravya quantity of kalka dravya is to be taken as 1/8th[2] where as in the context of Arka taila in sharangadhara samhita commentator gudartha deepika has given specific quantity of kalka dravya as 1/4th [3] Therefore, to standardize Arka taila present study was focused on pharmaceutical and analytical study of *Arka taila* in two different ratios.

MATERIALS AND METHODS

Present work of Pharmaceutico- analytical study and standardisation of Arka taila was divided into two parts:
1. Pharmaceutical study
2. Analytical study

Pharmaceutical study
The pharmaceutical study deals with the whole process of preparation of medicine beginning from collection of drugs to obtaining the final product. Here the Arka taila has been prepared with two different ratios of kalka, Sample 1 (Arka taila with 1/8th kalka), Sample B (Arka taila with 1/4th kalka). It is divided into the following sections:

A. Collection of the drug
B. Preparation of Arka taila

A. Collection of the drug
The raw drugs required for the preparation of medicine haridra was procured from Teaching Pharmacy S.D.M.C.A.H. Hassan on 13- 05- 2015. Arka patra were collected from the area Thanneruhalla, Hassan, Karnataka.

B. Preparation of Arka Taila
Preparation of Swarasa
Materials: Vessel, Cora cloth, Lid, Water, Stove, Khalva yantra.

Method: Collected Arka patra and they were washed to remove physical impurities. As the Arka patra are leathery in nature it is difficult to extract Swarasa. Hence Swedana procedure was followed. In a vessel sufficient quantity of water was taken and the mouth of the vessel was covered with Cora cloth on which the cleaned arka patra were placed and closed with a lid and the vessel was kept on stove and subjected to heat on Mandagni. Arka patra turned soft by contact with steam; swedana procedure was carried out in different batches. Later the softened leaves were pounded in Khalva yantra. The Khalva yantra measurement is as follows: external height 15cm, internal height 10.5 cm, thickness 2.5cm, length 37cm, external middle breadth 22cm, internal middle breath 16cm, Peshani - length 28cm, circumference base 25 cm. The softened leaves were pounded and squeezed with cora cloth to obtain Swarasa.

Preparation of Kalka
Kalka was prepared with fine powder of Haridra. It was coarsely powdered in khalwa yantra and finely powdered in mixer grinder. The particles of the fine powder were of the sieve size no 80 - 100. Aquaguard water was used for making the kalka and was made into a bolus and used for the taila paka.

Preparation of Arka taila
Materials: Vessel, Spoon, Stove, Thermometer, Cloth, Beaker

Ingredients: Arka patra swarasa
Haridra kalka
Sarshapa taila

Method: The Swarasa and Kalka prepared as above were used for the taila paka. Sarshapa taila manufactured at Nutrela Pharmacy Rajasthan was taken and the preparation was carried out at Teaching pharmacy, S.D.M. College of Ayurveda and Hospital, Hassan.

The Taila paka was done in a stainless steel vessel with a Circumference – 101 cm, Depth at centre - 18 cm, Thickness – 2 cm. LPG stove was used for the heating purpose. Mild flame was maintained during the whole process. The changes in the taila and kalka along with the temperature changes were noted at every 10 min throughout the process. The heating was stopped when the Sneha Siddha lakshanas were attained. After that the taila was filtered and amount of the taila obtained was noted down. These two samples were used for Analytical study.

Observation and results
Table 1: Extraction of Arka patra Swarasa.

Sl. No	Date of process	Quantity of leaves taken	Quantity of Swarasa obtained
1.	26- 5- 2015 (Sample A)	4 Kg	2 litres 100 ml
2.	16- 7- 2015 (Sample B)	2 kg	1500 ml

Table 2: Outcome of Arka taila.

Samples	Quantity Taken	Quantity Obtained
Sample A	500 ml	400 ml (80 %)
Sample B	300 ml	100 ml (33%)

Table 3: Time taken for preparing Arka taila.

Samples	Total Time taken for process
Sample A	5 hrs 50 min
Sample B	4 hrs

Analytical study
In this study Analytical evaluation of Arka taila was carried out to develop preliminary standards. Four Samples of prepared medicine were analysed using following parameters as per the references available in protocol for testing published by CCRAS.[4]

1. Organoleptic Characters: Colour, Odour
2. Physical parameters: Refractive index, Specific gravity, Viscosity
3. Physico –chemical parameters: Iodine value, Saponification value, Acid value
4. HPTLC

Analytical study was carried out at S.D.M. Centre for Research in Ayurveda and Allied Sciences, Udupi.

Methodology: Study was done in the following samples.
Organoleptic charecters

Colour: yellow
Odour: characteristics of Sarshapa and Haridra

Table 4. Analytical parameters.

Parameter	Sample A	Sample B
Refractive Index	1.47206	1.47006
Saponification Value	149.469	184.594
Acid Value	3.217	3.249
Iodine Value	101.52	107.611
Specific Gravity	0.911	0.919
Viscosity	64.1368	65.322

Table 5: T.L.C. Report of Sample A.

Sample A			
At 254 nm	**At 366 nm**	**At 540 nm**	**Post Derivation**
0.04 (L. Green)	0.03 (F.L.Brown)	-	0.04 (L. Violet)
-	0.04 (F.L. Green)	0.28 (L.Yellow)	0.09 (L. Violet)
-	-		0.11 (L. Violet)
0.18 (L. Green)	-		0.14 (L. Violet)
-	0.09 (F.L. Green)		0.17 (L. Violet)
0.26 (L. Green)	0.28 (F.D. Green)		-
-	-		0.26 (L. Brown)
0.65 (L. Green)	0.39 (F.L. Green)		0.33 (L. Violet)
	0.44 (F.L. Green)		-
	0.49 (F.L. Violet)		0.50 (L. Violet)
	0.64 (F.L. Violet)		0.56 (L. Violet)
			0.67 (L. Violet)

Table 6: T.L.C. Report of Sample B.

Sample B			
At 254 nm	**At 366 nm**	**At 540 nm**	**Post Derivation**
0.04 (L. Green)	0.03 (F.L. Brown)	-	0.04 (L. Violet)
-	0.04 (F.L. Green)	0.28 (L. Yellow)	0.09 (L. Violet)
-	-		-
-	-		0.14 (L. Violet)
0.24 (L. Green)	0.09 (F.L. Green)		0.17 (L. Violet)
-	-		0.20 (L. Violet)
0.28 (L. Green)	0.30 (F.D. Green)		0.26 (L. Brown)
0.69 (L. Green)	0.39 (F.L. Green)		-
	0.44 (F.L. Green)		0.37 (L. Violet)
	0.49 (F.L. Violet)		0.50 (Violet)
	0.64 (F.L. Violet)		0.56 (L. Violet)
			0.67 (L. Violet)

H.P.T.L.C

Table 7: H.P.T.L.C value of Sample A at 254 nm.

Sample A		
Peak	**Max. Position Rf**	**% Area**
1	0.01	15.11
2	0.06	1.72
3	0.21	7.27
4	0.28	22.05
5	0.48	2.14
6	0.73	5.68
7	0.85	45.95

Table 8: H.P.T.L.C value of Sample B at 254 nm.

Sample B		
Peak	**Max. Position Rf**	**% Area**
1	0.02	24.28
2	0.30	33.44
3	0.48	2.35
4	0.73	4.64
5	0.88	21.31
6	0.94	13.98

Table 9: H.P.T.L.C value of Sample A at 366 nm.

Sample A		
Peak	**Max.Position Rf**	**% Area**
1	0.01	18.65
2	0.10	1.73
3	0.28	79.62

Table 10: H.P.T.L.C value of Sample B at 254 nm.

Sample B		
Peak	**Max.Position Rf**	**% Area**
1	0.02	22.76
2	0.10	3.70
3	0.30	73.54

Table 11: H.P.T.L.C value of Sample A at 540 nm.

Sample A		
Peak	**Max.Position Rf**	**% Area**
1	0.03	100.00

Table 12: H.P.T.L.C value of Sample B at 540 nm.

Sample B		
Peak	**Max.Position Rf**	**% Area**
1	0.02	100.00

Table 13: H.P.T.L.C value of Sample A at Post derivatisation.

Sample A		
Peak	**Max.Position Rf**	**% Area**
1	0.17	0.76
2	0.20	3.89
3	0.38	25.77
4	0.55	22.59
5	0.64	11.10
6	0.73	10.29
7	0.89	25.69

Table 14: H.P.T.L.C value of Sample B at Post derivatisation.

Sample B		
Peak	**Max. Position Rf**	**% Area**
1	0.02	11.07
2	0.11	0.79
3	0.17	0.84
4	0.20	1.94
5	0.24	0.93
6	0.40	21.35
7	0.56	19.13
8	0.64	12.51
9	0.74	11.94
10	0.90	19.50

DISCUSSION

Physical Parameters

A) Extraction of Arka patra Swarasa

During pilot study extraction of swarasa from Arka patra was followed in 2 different methods. One was by Puta method and the other one by Swedana method. By comparing both the process the yield obtained by Swedana method gave good yield than the puta method and the time taken for the extraction was also less. Hence for this study Swedana method of extraction of swarasa was followed.

In an average here an attempt to extract the swarasa from 4 Kg Arka patra was done and 2 litres of Swarasa was obtained; it had T.S.S of 6. (for sample A) and Swarasa was extracted with 2 Kg arka patra and 1500ml swarasa was obtained (for Sample B)

B) Preparation of Arka taila

Volume of the end product

The volume of the end product for 500ml taila with $1/8^{th}$ part of kalka was 400 ml for the Sample A, and from 300 ml taila with $1/4^{th}$ kalka was 100 ml for the Sample B. This is because the suspended particles of the swarasa has added up to the kalka and absorption of the taila in the kalka will increase yielding in lesser yield of Taila.

Organoleptic characters

There was presence of odour of Haridra and Sarshapa taila during the preparation of Sample A and B. The end product of the taila of Sample A and B was greenish yellow colour due to the addition of Arka patra swarasa and haridra.

Changes during the paka of the taila

Colour of the taila gradually changes during the paka. Teekshnata of the Sarshapa taila was appreciated during the preparation of Arka taila, ratio of kalka plays important role in the paka of taila. As swarasa itself has solid particles in it will combine with the kalka dravya and the yield of the end product will be affected.

Phenodgama in taila was observed during the paka laxana and phena has been observed in all samples and kalka pareeksha was done to evaluate the moisture content as a Siddhi laxana.

Temperature

The range of Agni for preparation of taila was maintained at 90 – 94 ^{0} C by using mandagni for 4 samples. Guna sanchaya in the sneha takes place with longer duration as the active principles get dissociate in the media and hence Mandagni was preferred for the preparation of the sneha kalpana. And this temperature range helps to attain correct paka laxana without any charring.

Analytical Parameters

- **Refractive index:** The Refractive index of Sample B is less (1.47006) than Sample A (1.47156) A variation of 0.0015 was observed. This minute difference is because of the density of the taila as Sample B is with more quantity of Kalka.
- **Specific gravity:** The Specific gravity of Sample A is 0.911 and Sample B is 0.919. There is a minute difference between two samples as 0. 008. The specific gravity indicates the presence of solute content in the solvent. In this study the solvent is oil and the solute refers to extraction of active principles from the oil. Minimal rise in Sample B is observed due to more solute particles in that sample.
- **Viscosity:** Quantitavely, Viscosity is an index of a liquid to flow. The higher the viscosity of a liquid

the greater is the resistance to flow. If Viscosity of the oil is increased, the rate of absorption decreases. If the oil is less viscous this means rate of absorption is very high. Hence the oil is better absorbed into the skin. In this study, during analysis it is found that the viscosity of Sample A is 64.1368, Sample B is 65.322. With this it can be understood that Sample A shows better absorption than Sample B. However the interpretation of Viscosity in Ayurvedic terms can be linked with Snigdha & Picchila guna. More Viscosity should indicate more Snigdhata and vice versa. Hence it cannot be said that more Viscosity is a bad indicator which differs from the modern point of view.

- **Iodine value:** The iodine value indicates the degree of unsaturation, which in turn denotes the rancidity of oils the more the iodine number the more the unsaturated fatty acids bonds present if the iodine value is less it indicates the degree of saturation that indicates more number of double bonds in the oil. Iodine value of Sample B (107. 611) is more than Sample A (101.52), hence a sample with less quantity of kalka indicates less chance of Rancidity.
- **Saponification value:** Saponification value of Sample A (149.469) is less than Sample B (184.594). Saponification value is the amount of alkali needed to saponify a given quantity of fat which usually depends upon the number of COOH group present. The saponification value indicates the average molecular weight/ chain length of all fatty acids present. The long chain fatty acids found in fats have a low saponification value because they have relatively few numbers of carboxylic functional groups per unit mass of the fat as compared to short chain fatty acids. Which shows more shelf life is facilitated to sample A.
- **Acid value:** The Acid number is a measure of the amount of carboxylic acid groups in a chemical compound. The acid value indicates the free fatty acids in the oil sample. The free fatty acid is responsible for Rancidity of the compound. Higher the free fatty acid makes them more rancid. Less percentage of free fatty acid or no free fatty acids decreases the rancidity of the compound. Acid value of Sample A (3.217) is less than Sample B (3.249) Difference in the acid value observed in the present samples may be due to the quantity of kalka used for the preparation.
- **T.L.C. and H.P.T.L.C: T**here is no much difference observed between two samples in both T.L.C. and H.P.T.L.C. Both are with similar number of peaks and bands as ingredients of both samples are similar.

CONCLUSION

In this study arka taila was prepared with two different ratio of kalka dravyas which has shown the difference in both pharmaceutical and analytical values. Yield of the taila was more with less quantity of kalka and even most of the analytical parameters like Refractive index, Saponification value, specific gravity etc. has shown better result with sample A in comparison to Sample B. i.e. sample with more quantity of kalka has more chances for getting rancid than the other sample. This shows the importance of the quantity of kalka in the processing of taila kalpana with special reference to Arka taila.

REFERENCES

1. Murthy P.H.C. Sharangadhara Samhita. 2nd ed. Varanasi: Chaukhambha Sanskrit Series Office, 2007; 220.
2. Sharangadhara, Shastry Parashurama. Sharangadhara samhita. 5th ed. Varanasi: Chaukhambha orientalia, 2002; 213.
3. Sharangadhara, Shastry Parashurama. Sharangadhara samhita. 5th ed. Varanasi: Chaukhambha orientalia; 2002. 227.
4. CCRAS. Laboartory guide for analysis of Ayurveda and Siddha formulation. 1st ed. New delhi.Department of Ayush ministry of health and Family welfare. Govt. Of India, 2010; 16.