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Comparative Analytical Evaluation of *Niiragni* and *Sagni Vranarakshasa Taila*

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ABSTRACT

Sneha Kalpana is one of the important procedures among secondary preparations in *Ayurveda*, which is prepared by *Niragni* and *Sagnipaka* methods. *Adityapaka* also known as *Bhanupaka* or *Surya paka* is a *Sneha Kalpana* were *taila* is heated with mild temperature produced by the exposure of sunlight for a specific time period. *Vranarakshasa taila* is one among them. This method is practiced to prepare *taila paka* from the drugs which are having volatile property and are heat sensitive in nature. In present study, *Vranarakshasa taila* was prepared by both the methods and analytical study was carried out to observe the changes seen in both the methods. The study revealed that there is a significant change observed in values of the samples.

KEYWORDS

Sagni, Niragni, Vranarakshasa taila, Analytical study

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INTRODUCTION

Samskara is the process in which inherent properties of substance are transformed. This is done by dilution, application of heat, cleansing, churning, storing in a specific place, flavouring, preservation, container etc. All the *Samskara* are not applicable for all the *Dravya*, specific *Samskara* is used for specific substance. Selection of *Samskara* depends upon *mahabhoota* dominance of that *Dravya*. *Vranarakshasa taila* is an oil based herbo-mineral formulation which has been explained as *Adityapaaka taila* in *Bhaishajya Ratnavali*[1]. Present study aims at analysing the role of two heat sources, one being sunlight and other fire which are used in preparation of *Vranarakshasa taila.*

MATERIALS AND METHODS

Pharmaceutical source

Authenticated raw drugs were collected from market and *Shodhana* (purification) was carried out according to classical methods. *Parada shodhana*[2], *Gandhaka shodhana*[3], *Haratala shodhana*[4], *Manahshila shodhana*[5], *Vatsanabha shodhana*[6] and processing was done in *Rasashastra and BhaishajyaKalpana* practical laboratory, SDMCA, Udupi.

MATERIALS

Mortar and pestle, iron pans, cotton cloth, gas stove, vessels

Ingredients

Shuddha Parada, Shuddha Gandhaka, Shuddha Haratala, Shuddha Manahshila, Girisindhoora, Tamra bhasma, Shuddha Vatsanabha, Rasona and *Moorchita Sarshapa Taila.*

Method 1

***Niragni Sneha Paka* (With addition of water)**

Shuddha Haratala, Shuddha Manahshila and *Shuddha Vatasanabha* were made into fine powder individually. *Nistusha Rasona* was made into *Kalka* form by pounding in a *Khalvayantra. Kajjali* was taken in *Khalvayantra,* fine poweder of *Shuddha Haratala, Shuddha Manahshila, Nagasindhoora, Tamra bhasma* and *Shuddha Vatsanabha* were added in chronological order and *Mardana* was done. *Lashuna Kalka* was added to the above mentioned homogeneous mixture of all the drugs and *Mardana* was done. *Moorchita Sarshapa Taila, Kalka* and water were taken in an iron vessel and stirred. Then iron vessel was covered with thin cotton cloth and kept under sun light daily from morning to evening (9am-5pm).The oil was stirred thrice in a day and temperature of both atmosphere and oil was noted at the same

time. Procedure was carried out till evaporation of water.

Niragni Sneha Paka (without addition of water)

The same procedure was carried but without addition of water.

Method 2

Sagni Sneha Paka

Shuddha Haratala, Shuddha Manahshila and *Shuddha Vatasanabha* were made into fine powder individually. *Nistusha Rasona* was made into Kalka form by pounding in a *Khalvayantra*. *Kajjali* was taken in *Khalvayantra*. *Haratala, Manahshila, Nagasindhoora, Tamrabhasma* and *Vatsanabha* were added in chronological order and *Mardana* was done. After homogeneous mixture of all the drugs *Lashuna Kalka* was added and *Mardana* was done. In an iron vessel *Moorchita Sarshapa Taila* was taken, *Kalka* and water were added to it and the vessel was subjected for heating on gas stove over mild temperature. Every day from morning till evening (9am-5pm). Daily the oil temperature of both flame and oil was noted. When it attained *Taila siddhi lakshanas,* oil was filtered, cooled and stored in air tight container.

Analytical study was carried out at S.D.M. Research centre of Ayurveda and Allied sciences, Udupi, Karnataka, India.

A. Organoleptic Characters:

The drug is examined by means of the sense organs, and the difference in the drugs which are observable at a macroscopic level is appreciated, it includes following tests.

Colour, Odour, Appearance.

B. Physico-Chemical Analysis: It includes following tests

Refractive index[7] ,Loss on Drying[8] , Specific Gravity[9],Saponification Value[10], Iodine value[11], Acid Value[12], Viscosity[13]

CHROMATOGRAPHIC STUDY

(High performance Thin Layer Chromatography)

Sample obtained in the procedure for the determination of unsaponifiable matter is dissolved in 10 ml of chloroform. 3 and 6 µl of the above sample was applied on a pre coated silica gel F254 Aluminum plates to a band width of 8 mm using Linomat 5 TLC applicator. The plate was developed in Toluene : Ethyl Acetate (9:0.7) and the developed plates were visualized under UV 254 and 366 nm, and after derivatisation in vanillin-sulphuric acid spray reagent and scanned under UV 254 and 366 nm. The R_f, colour of the spots and densitometry scans were recorded.

OBSERVATIONS AND RESULTS

Pharmaceutical study

Table 1 Results of pharmaceutical Study

Parameters	NVTW	NVT	SVT
1.Colour	Jet black	Reddish –brown	Brownish –black
2.Consistency	Thick paste like	Viscous oily	Viscous oily
3.Gandha	Mild Lashuna	Strong Lashuna	Mild Lashuna
4.Duration	91 days	13 days	11days
6.Maximum Temperature	Oil -56°C Climate -46°C	Oil - 60°C Climate - 44°C	Oil -85°C Flame-467°C
7.Initial Quantity	Oil= 1250ml (1375g) + wt. of Kalka Dravya = 1998g, Water =5000ml	Oil=700 ml (770g) Kalka=348.91g	Oil=1250ml Water=5000ml Kalka= 623g
7.Final Quantity	Kalka= 1440 g	Oil=570 ml Kalka=365g	Oil= 1000ml Kalka= 680g
8. Loss	558g Oil=130ml	Kalka=16.09g gain	250ml oil loss 57g Kalka gain
9. Loss percentage	27.92%	Oil=18.57%loss Kalka= 4.6%gain	Oil= 20% loss Kalka=9.1%gain

NVTW – *Niragnipaka Vranarakshasa Taila* with water, NVT – *Niragnipaka Vranarakshasa Taila* and SVT – *Sagnipaka Vranarakshasa Taila.*

Results of Analytical Study

Table 2 Result of Organoleptic Characters

Sl No.	Parameters	NVTW	NVT	SVT
1.	**Colour**	Jet Black	Reddish brown	Brownish black
2.	**Odour**	Mild *Lashuna Gandhi*	Strong *Lashuna gandhi*	Strong *Lashuna gandhi*
3.	**Appearance**	Thick paste like	Viscous oily	Viscous oily

NVTW – *Niragnipaka Vranarakshasa Taila* with water, NVT – *Niragnipaka Vranarakshasa Taila* and SVT – *Sagnipaka Vranarakshasa Taila.*

Table 3 Results of Physico-Chemical values

Sl. No	Parameters	NVTW	NVT	SVT
1.	Loss on drying at 1050C	0.459	0.09998	0.09996
2.	Refractive Index	-	1.47082	1.46482
3.	Specific Gravity	-	0.9166	0.9439
4.	Viscosity	-	88.391	204.747
5.	Saponification Value	97.991	178.095	208.183
6.	Iodine Value	74.647	111.822	121.196
7.	Acid Value	1.093	0.541	1.066

NVTW – *Niragnipaka Vranarakshasa Taila* with water, NVT – *Niragnipaka Vranarakshasa Taila* and SVT – *Sagnipaka Vranarakshasa Taila.*

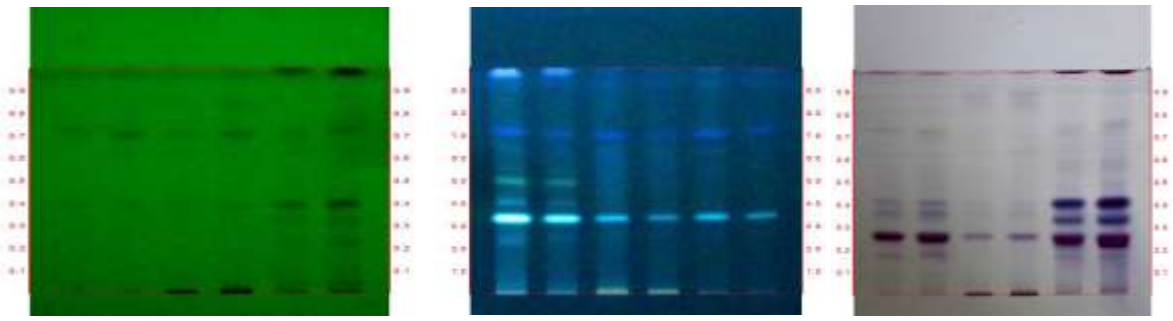
Table 4 Rf Values of all the samples (At 6µ)

Agnipaka Vranarakshasa taila (SVT)			*Aadityapaka Vranarakshasa taila* (NVTW)			*Aadityapaka Vranarakshasa taila* (NVT)		
254 nm	**366 nm**	**Post Derivatisation**	**254 nm**	**366 nm**	**Post Derivatisation**	**254 nm**	**366 nm**	**Post Derivatisation**
-	-	-	-	-	0.03(L Violet)	-	-	0.03(L Violet)
-	-	0.05 (L Violet)	-	-	0.05 (L Violet)	0.05 (L Green)	-	0.05 (L Violet)
-	-	0.10 (L Violet)	-	-	0.10 (L Violet)	-	-	0.10 (L Violet)
-	-	-	-	-	-	-	0.13 (FL Blue)	0.13(L Violet)
-	-	0.19 (L Violet)	-	-	-	-	-	0.19 (L Violet)
-	-	-	-	-	-	0.22 (L Green)	-	-
-	-	-	-	-	-	-	0.24 (FL Blue)	-
-	0.26 (FL Blue)	0.26 (D Violet)	-	0.26 (F L Blue)	0.26 (Violet)	-	-	0.26 (D Violet)
-	-	-	-	-	-	0.33 (L Green)	-	-
-	0.35 (F Blue)	0.35 (L Blue)	-	0.35 (F Blue)	-	-	0.35 (F Blue)	0.35 (D Blue)
-	-	0.38 (L Blue)	-	-	0.38 (L Violet)	-	-	-
0.40(L Green)	-	-	0.40(L Green)	-	-	-	-	-
-	-	0.42 (L Blue)	-	-	0.42(L Violet)	0.42 (D Green)	0.42 (F Blue)	-
-	-	-	-	-	-	-	-	0.44 (D Blue)
-	-	0.47 (L Violet)	-	-	-	-	-	-
-	-	-	-	-	-	-	-	0.49 (L Violet)

-	-	-	-	-	-	-	0.51 (F Green)	-
-	-	-	-	0.56 (F L Blue)	-	-	0.56 (F L Green)	-
-	-	0.58 (L Violet)	-	-	-	-	-	-
-	-	-	-	-	-	-	-	0.61 (L Violet)
-	0.63 (F L Green)	0.63 (L Violet)	-	-	0.63 (L Violet)	-	-	-
-	-	-	-	-	-	-	0.65 (F L Green)	0.65 (L Violet)
0.72 (Green)	0.72 (F Blue)	0.72 (L Violet)	0.72 (L Green)	0.72 (F Blue)	-	0.72 (Green)	0.72 (F Blue)	-
-	-	-	-	-	-	-	-	0.77 (L Violet)
-	-	-	-	-	0.84 (L Violet)	-	-	-
-	-	0.87 (L Violet)	-	-	-	-	-	-
-	-	-	-	-	0.89 (L Violet)	-	-	-
-	0.93 (F Blue)	-	-	0.93 (F Blue)	-	-	-	0.93 (L Violet)

PHOTOGRAPHS OF ANALYTICAL STUDY OF *VRANARAKSHASA TAILA*

Figure 1 TLC photo documentation of unsaponifiable matter of SVT, NVTW, NVT



254nm **366nm** **Post derivation**

Track 1- Sagnipaka Vranarakshasa Taila(SVT) – 3 µl;
Track 2– Sagnipaka Vranarakshasa Taila (SVT) – 6 µl;
Track 3- Niragnipaka Vranarakshasa Taila with water 1(NVTW) – 3 µl;
Track 4– Niragnipaka Vranarakshara Taila with water 1(NVTW) – 6 µl;
Track 5– Niragnipaka Vranarakshara Taila 2 (NVT) – 3 µl;
Track 6– Niragnipaka Vranarakshara Taila 2 (NVT) – 6 µl

DISCUSSION

The three samples of *Vranarakshasa Taila* were prepared according to the *Bhaishajya Ratnavali*. The colour of NVTW was jet black due to presence of *Kalka Dravya* along with the oil and which was thick paste like in consistency. Whereas, in NVT colour of Taila remained the same as *Moorchita Sarshapa Taila* i.e., reddish-brown and consistency was thick when compared to the same. In SVT it was brownish black which may due to chemical reactions taking place between the oils and *Kalka Dravya* at constant temperature throughout the procedure. Its consistency was same as that of NVT [Table 1].

Strong *Lashuna* smell was appreciated in NVT as compared to other two oils because of short duration of procedure as compare to NVTW and SVT, which was due to less intensity of temperature. Long duration of procedure and high intensity of heat are responsible for more and more evaporation volatile contents of *Lashuna* which are responsible for smell. Hence NVT might have emitted strong *Lashuna* smell as compared to other two preparations [Table 1].

The duration for NVTW was 91 days because of addition of water and as it was prepared under sunlight. In NVT duration was of 13 days because it was prepared without addition of water and was prepared under sunlight. The time taken for the preparation of SVT was 11 days, even though the water was added to it [Table 1].

In all the three preparations oil was subjected to heat were 8 hours per day. In NVTW and NVT morning and evening temperature was less and mid-day there was peak temperature i.e., there was temperature variation according to diurnal variation. In case of SVT same temperature was maintained from morning to evening hence it was possible to complete the procedure within the short period. Compared to NVTW duration required for preparation of NVT was markedly less and it was due to absence and addition of water to it. The

maximum climatic temperature observed in NVTW was 46^0C and oil was 56^0C.

As preparation was done in summer season (March-May) the temperature difference between oil and climate was of only 10^0C. In NVT climatic temperature and oil temperature was 44^0C and 60^0C, respectively prepared in the month of September, the difference was 16^0C. This indicates that absorption of heat by the oil is less in the presence of water. Hence NVTW took longer duration for the completion of procedure.

In SVT, flame and oil temperature were 467^0C and 85^0C, respectively, even though the flame temperature was more, oil temperature was maintained to 85^0C - 90^0C by increasing the distance between flame and oil containing vessel with the help of stand [Table 1].

In NVTW, separation of oil from *Kalka* was found difficult as both were completely mixed with each other. In case NVT and SVT separation of oil from Kalka was found easy. In NVT, 18.57% oil loss was found where as in SVT it was 20% [Table 1].

HPTLC densitometric scan of the plates showed, On photo documentation under 254 nm there were 2, 2 and 5 spots in SVT, NVTW and NVT respectively under 250nm. On photo documentation under 366 nm there were 5, 5 and 8 spots in SVT, NVTW and NVT respectively. In post derivatisation there were 12, 9 and 13 spots in SVT, NVTW and NVT respectively [Table 4].

The maximum number of spots found in NVT which corresponds the maximum extraction is seen because the procedure was carried out under sunlight for shorter duration as compared to SVT. The spots found lesser in SVT, that might be due to high intensity of heat. It was least in NVTW, it might be because of the preparation of oil took longer duration as water added to it took more time for evaporation. The greater the number of spots indicates the maximum quantity of active ingredient extracted in that respective taila. [Figure 1].

CONCLUSION

The *Niragni Vranarakshasa Taila* prepared with the addition of water is thicker in consistency whereas other two i.e. *Niragni Vranarakshasa Taila* (without addition of water) and *Sagni Vranarakshasa Taila* are viscous and oily in consistency. Increase in Parameters like, Moisture content and Acid value indicates about the short shelf life of the drug, which was comparitevely more in *Niragni Vranarakshasa Taila* with addition of water, hence the early chances of rancidity. Percentage of saturated and long

chain fatty acids are more in *Niragni Vranarakshasa Taila* with addition of water when compared to other two oils, which was revealed through Iodine value and Saponification value.

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