WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 7, 1254-1264. Research Article ISSN 2277–7105

CONCEPT OF AVARTHANA WITH SPECIAL REFERENCE TO KSHEERABALA TAILA

***Dr. Renju S., B.A.M.S, M.D [Bhaishajya Kalpana]**

Associate Professor, Dept. of Rasa Sastra and Bhaishajya Kalpana, S.C.P.M Ayurveda Medical College and Hospital, Gonda, U.P.

Article Received on
13 February 2025,

Revised on 04 March 2025,
Accepted on 25 March 2025

DOI: 10.20959/wjpr20257-36163

***Corresponding Author**
Dr. Renju S.
Associate Professor, Dept. of Rasa Sastra and Bhaishajya Kalpana, S.C.P.M Ayurveda Medical College and Hospital, Gonda, U.P.

ABSTRACT

The concept of Avarthana is explained in the context of Sneha Kalpana i.e, Ghrita and Taila paka. The process of Avarthana is first explained in Chakradatta in the context of Vatarakta chikitsa. As per the reference of Snehapaka, the ingredients like kalka, sneha and drava dravya are taken and subjected to Snehapaka procedure. After obtaining Sneha siddhi lakshana, Sneha has to be filtered and again it is subjected to Sneha paka by adding same kalka and drava dravya. This process can be repeated for 10, 27, 41, 100 and 1000 times. In Ayurveda, Ksheerabala thailam-Bala/Sida containing taila preparation has special importance. After each paka, the quantity of Sneha will be reduced and become thicker in consistency. Generally, Avarthita Sneha are indicated in vata vyadhi for abhyanthara prayoga and for Nasya karma. This paper throws light on the Avartana technology and its therapeutic importance in the sneha kalpanas mainly taila kalpana. Hence this paper is an attempt to review and analyse the concept of avarthana (repetitive processing) with the help of Ksheerabala taila avarthy.

KEYWORDS: Avarthana, Sneha, Taila, Ksheerabala, Ghrita, Snehapaka.

INTRODUCTION

Avarthana is a process / technique seen in practical manufacturing methods of Sneha Kalpana[1] i.e. taila and ghrita. The old treatises like Charaka Samhita, Sushruta Samhita also mentions about Avarthana of tailas, but the Ratnaprabha Teeka on Chakra Dhatta is the classical text which explains the pharmaceutical process of avarthy in the context of Dasapushpa thailam.[2] Ashtanga Hridaya, vatarakta chikitsa explains the preparation of

Ksheerabala thailam with avarthana.[3] This Ksheerabala avarthana thaila is having rasayana property. It gives clarity to indriyas, it is jeevana, brimhana, swarya and gives prasadana to sukra and asrik dhatus.

In our Ayurvedic literature, references are available regarding potentiation of a drug or a formulation. The purpose of potentiation is –

i) To minimize the dose
ii) For faster drug delivery

The term Avarthana refers to the repetitive processing of the particular formulation to a specific number of times with the objective of making the formulation better with increased therapeutic efficiency and reduced dose. Here we can understand that this procedure acts as a samskara[4], which has a great role in augmenting the gunas of the particular formulation. Potentiation (Gunadhana or Viryadhana) of the drugs are need of hour.

Medicated Oil or Ghee cannot be administered in large dosage forms for longer duration. May be this reason, has innovated the noble minds to go for Avarthana techniques.

Definition

'Avarthana' of a Sneha is a special pharmaceutical procedure, in which the prescribed quantity of ingredients is added and Sneha paka siddhi is carried repeatedly, till the attainment of desired quantity of its potency. This method is used to obtain the maximum concentration of phyto-constituents of the drug into the lipid extractive media.

Procedure

The basic ingredients are Kalka, Sneha, Drava Dravya. Ratio 1:4:16 resp.

Here, initially prescribed quantity of ingredients is taken along with the base of Taila or Ghrita and Snehapaka siddhi is carried out. The filtrate obtained is of 1st Avarthana Taila. After filtration, if successive pakas are to be carried the previous Avarthita Taila / Sneha is taken (in place of Sneha dravya) and other ingredients are added in prescribed ratio and Sneha paka siddhi is carried.

1. Every time after paka siddhi, filtration is carried out.
2. Sneha should not go beyond Madhyama paka, as the avarthita Snehas are used for Oral intake or Nasya purposes, chances of loss of medicinal properties are there.

Examples

1. Dasa paka – Sata paka – Sahasra paka – Bala Taila (Ca.Ci. 29/119)
2. Satapaka Yastimadhu Taila (Ca. Ci. 29/115-118)

Advantages	Disadvantages
Minimum dose	Cost effect – Successive pakas increase the cost of the drug.
Maximum effect	Time factor – It requires longer duration for the preparation of Avarthita Tailas.
Early action	Cautious handling – Much caution is required for the preparation of successive pakas and careless may lead into loss of oil as well as loss of medicinal properties.
Easy drug administration	
Easy packing and marketing	

A conceptual basis for potentiation by Avarthana technique

Each time ingredients are added in Kalka or Kasaya form increases the chemical constituents of the formulae; whereas the quantity of Oil or Ghee (Oleaginous base) is same. Thermogenic changes may simplify the compounds of the medicament and may help in providing maximum surface area of absorption and hence maximum bio availability also.

The wide range of simple to complex chemical constituents is possible in such Avarthana of Snehas.

This can be explained with a hypothetical calculation as below.

	AVARTHANA			KBT4A to KBT 50 A
	KBT 1A	KBT 2A	KBT 3A	
CHEMICAL CONSTITUENTS	A	A+(A or A_1)	A+(A or A_1) + (A or A_1 or A_2)	So on…
	B	B+(B or B_1)	B+(B or B_1) + (B or B_1 or B_2)	
	C	C+(C or C_1)	C+(C or C_1) + (Cor C_1 or C_2)	
	D	D+(D orD_1)	D+(D orD_1) + (D or D_1 or D_2)	
	Soon…..			

Let us consider that 1st Avarthita KBT possesses 4 chemical constituents like A, B, C and D (likewise there may be several chemical constituents also.) When it is subjected to 2nd paka, again A, B, C and D constituents will be generated as milk and kalka are added. Now, previous chemical constituents (of KBT 1st Avarthana) may remain stable as A, B, C and D or may get transferred as A_1, B_1, C1 and D_1. In 3rd Avarthana, similar process of heating continues. So, here A, B, C and D (so on) chemical constituents may be once again generated.

At the same time, A_1, B_1, C_1 and D1 of 2nd paka may remain as such on getting stability or may again regenerate or get transferred as A_2, B_2, C_2 and D_2.

Meanwhile A, B, C and D of 2nd Avarthana may stay stable as it is or may be transferred as A_1, B_1, C_1 and D_1. At this juncture, A, B, C and D constituents of 1st Avarthana which get transferred into 2nd Avarthana may again change in chemical constitution as simpler compounds or constituents. Otherwise, they may remain stable also. Thus, we can assume the existence of such a wide range of numerous simple to complex chemical constituents of various molecular size after 50th paka, unless it is stabilized. Such simple to complex chemical constituents (on getting 'Uttarottara Laghuta') may help to pacify the vitiated Dosas, on penetrating to various Dhatu levels.

In other words, the maximum surface area provided for the active constituents of the formulation may lead into maximum bio-availability of the drugs, in its shortest duration. The varied range of simple to complex constituents may help to maintain the required serum level concentration of the pharmaceutically active principles.

In brief, the Avarthana technique may help

- To enhance the drug absorption
- For drug distribution
- For binding / localization / storage
- Bio-transformation and Delayed excretion

For example, in relation to the absorption, passive transport depends on concentration gradient. The drug given as a concentrated solution is absorbed faster from the dilute ones. Secondly, only lipid soluble drugs can penetrate blood-CSF barrier because of tight junctions in capillary endothelium, limits the entry of non-lipid soluble drugs. Same is applied to the Drug localization, Bio transformation and Excretion.

REFERENCE FOR KSHEERABALA THAILA

"Balamulat panca palam Ksirapistam tu Yojayet I
Ksire Caturgune Taila prastham Mrdu vahnina Pacet II
Pane Bastau Tathabhyange Nasya Karmani Sasyate I
Etat Ksira Bala Tailam Vatasiti Vinasanam II" (Sa. Yo. 5th Taila Prakarana/12)

i.e. Five pala (240 gm) Ksira pista Balamula Kalka is prepared. On adding four times milk, one Prastha (768 ml) Taila is boiled in Mrdu Agni (Taila paka is carried in Mrdu Agni). This taila is used for Pana (Oral intake), Basti (Enema), Abhyanga (External Oil application) and Nasya Karma (Errhines). This Ksira Bala Taila cures all 80 types of Vata rogas.

Here commentators have left some confusion regarding quantity of Milk that should be added. By the word "Ksheere chaturgune" some scholars opine that milk should be taken four times to the quantity of Kalka. Some others advocate to take milk four times to that of oil. [Experts give their opinion that, in the Avarthana, as we are adding kalka each time, to get maximum active principles, four times to the kalka, milk is to be taken in order to reduce dilution.]

Ksheera Bala Taila 1 Avarthana

Equipment : Gas stove, steel vessel, cloth, spatula etc.

Ingredients

1. Ksheerapista Atibalamula Kalka	-	3.440 Kg.
2. Murcchita Tila Taila	-	11.00 Litre
3. Ksheera	-	13.760 Litre

Method of Preparation

1. The Ksira Pista Atibala mula Kalka is prepared by mixing Atibala mula Yavakuta curna with boiled milk. (As in the pilot study practical's, milk get spoiled as and when Atibala Mula Yavakuta churna was added to the cold milk, the boiled and cooled milk is used to prepare Kalka).
2. The above Kalka is added to the Murcchita Tila Taila and prescribed quantity of milk (which is already boiled) is added to the vessel.
3. Heating is continued in mild fire, over gas stove.
4. Constant stirring is carried to avoid sticking of the Kalka drugs.
5. On the first day, heating is continued for 3 hr 30 minutes. Later, it is allowed for self-cooling and the mouth is closed with a tray.
6. Next day, again heating is continued till the completion of paka i.e. till the attainment of Pakasiddhi lakshanas.
7. Later, it is taken out from the fire and filtered in its warm stage itself.
8. The oil so obtained is KBT 1 Avarthita and is preserved in glass jars.

KBT 2nd Avarthana to 50th Avarthana

For 2nd Avarthana, the 1st Avarthana KBT is taken in the place of oil and the fresh Atibala mula kalka and Milk are added in the prescribed ratio. Similarly further Avarthanas were carried by using preceding oil as base.

A notable point is that, after 19th Avarthana, in Pakasiddhi, Ghrita paka lakshanas ('Phenasanti' was observed instead of 'Phenodgama') were observed in contrary to the Taila Pakasiddhi lakshanas.

RESULTS AND DISCUSSIONS

Table 1: Specific gravity at 40°C for different Taila samples.

No:	Sample	Specific gravity
1	Krishna tila taila	0.9112
2	Murcchita tila taila	0.9107
3	KBT 1 A	0.9102
4	KBT 7 A	0.9096
5	KBT 50 A	0.9093

The data reveals that the specific gravity of Krishna Tila Taila reduces from 0.9112 to 0.9107 after Murcchana. Whereas in KBT 1st Avarthana further declining was observed and it was 0.9102. The specific gravity of KBT decreases gradually with the increase of Avarthana and it is nearer to the specific gravity of Ghee (0.9100) in KBT 7A (0.9096) and KBT 50A (0.9093).

Table 2: Refractive indices of Ksheera Bala Taila samples.

Sample	Refractive Index At 40^0C
Krishna Tila Taila	1.4730
Murcchita Tila Taila	1.4725
Ksheera Bala Taila – Avarthana KBT 1A	1.4710
KBT 2A	1.4705
KBT 3A	1.4700
KBT 4A	1.4700
KBT 5A	1.4695
KBT 6A	1.4685
KBT 7A	1.4685
KBT 8A	1.4685
KBT 9A	1.4680
KBT 10A	1.4670
KBT 11A	1.4670
KBT 12A	1.4665
KBT 13A	1.4665
KBT 14A	1.4660
KBT 15A	1.4650

KBT 16A	1.4645
KBT 17A	1.4645
KBT 18A	1.4645
KBT 19A	1.4642
KBT 20A	1.4640
KBT 21A	1.4640
KBT 22A	1.4638
KBT23A	1.4635
KBT 24A	1.4635
KBT 25A	1.4632
KBT 26A	1.4630
KBT 27A	1.4630
KBT 28A	1.4628
KBT 29A	1.4625
KBT 30A	1.4625
KBT 31A	1.4622
KBT 32A	1.4622
KBT 33A	1.4622
KBT 34A	1.4622
KBT 35A	1.4622
KBT 36A	1.4620
KBT 37A	1.4620
KBT 38A	1.4620
KBT 39A	1.4620
KBT 40A	1.4620
KBT 41A	1.4620
KBT 42A	1.4620
KBT 43A	1.4620
KBT 44A	1.4620
KBT 45A	1.4620
KBT 46A	1.4620
KBT 47A	1.4620
KBT 48A	1.4620
KBT 49A	1.4620
KBT 50A	1.4620

Table-2 shows that the R.I. of Krsna Tila Taila was 1.4730 which 1.4610 declined to 1.4725 on Murcchana. Sample KBT 1A i.e. after 1st Avarthana, was having R.I. of 1.4710, which was gradually decreased in succeeding Avarthana and reached to 1.4650 in 15th Avarthana. R.I. decreases further with the increase in Avarthana and reached to 1.4625 in 30th Avarthana. Afterwards gradual decrease was observed till 35th Avarthana and in 36th Avarthana it reached to 1.4620. Then there was no decrease in R.I. till 50th Avarthana i.e. KBT 50A. The stable R.I. observed after 36th Avarthana till 50th Avarthana is suggestive of gradual conversion in to Ghee, which is evident from its physical nature. The R.I. Cow's Ghee is 1.4610, which is nearer to the R.I. of the latter samples.

Table 3: Loss on drying of Ksheera Bala Taila samples.

No:	Sample	Loss On Drying At 110^0C
1	Krishna tila taila	1.2 % w/w
2	Murcchita tila taila	1.2 % w/w
3	KBT 1 A	1,0 % w/w
4	KBT 7 A	1.0 % w/w
5	KBT 50 A	0.5 % w/w

From the Table No. 3, it is known that Krsna Tila Taila and Murcchita Tila Taila were possessing L.O.D. of 1.2 % w/w. The later samples KBT 1A and KBT 7A were observed to be L.O.D. of 1.0% w/w whereas L.O.D. of 50th A was 0.5% w/w. The reduced L.O.D. may be suggestive of minimum water content in the later samples.

Table 4: Acid value of Ksheera Bala Taila samples.

No:	Sample	Acid Value
1	Krishna tila taila	0.75
2	Murcchita tila taila	5.91
3	KBT 1 A	1.22
4	KBT 7 A	2.63
5	KBT 50 A	1.43

The Table - 4, shows that the Acid value of Krsna Tila Taila (0.75) was 1.43 increased to a peak of 5.91 after Murcchana. Probably acidic substances like Amalaki, Hrivera etc. have contributed to this change. In KBT 1A again a marked decline was observed and its Acid value was 1.22. Whereas it was 2.63 and 1.43 in samples of KBT 7A and KBT 50A respectively.

Table 5: Saponification values of Ksheera Bala Taila samples.

No:	Sample	Saponification Value
1	Krishna tila taila	-
2	Murcchita tila taila	190.44
3	KBT 1 A	192.02
4	KBT 7 A	199.88
5	KBT 50 A	198.50

From Table No. 5, it is evident that Murcchita Tila Taila possesses Sap. value of 190.44 and it was increased to 192.02 in 1st Avarthana. In 7th Avarthana it reached to the maximum of 199.88. In 5th Avarthana Sap. value was slightly reduced (198.50).

Table 6: Ester value of the Ksheera Bala Taila samples.

No:	Sample	Ester Value
1	Krishna tila taila	-
2	Murcchita tila taila	-
3	KBT 1 A	190.79
4	KBT 7 A	197.25
5	KBT 50 A	197.07

From Table No. 6, it can be observed that KBT 1A is having Ester value 190.79 which is increased to 197.25 in 7th Avarthana and remained almost same in 50th Avarthana (197.07).

Table 7: Percentage of unsaponifiable matter of KBT samples.

No:	Sample	Unsaponifiable matter (% w/w)
2	Murcchita tila taila	0.61
3	KBT 1 A	1.49
4	KBT 7 A	1.85
5	KBT 50 A	0.47

From the Table-7, it can be observed that, the Unsaponifiable matter in Murcchita Tila Taila is 0.61% w/w and it increased to 1.49% w/w in KBT 1A. This is further increased to 1.85 in 7th Avarthana (KBT 7A). But, the Unsap. matter was only 0.47% in KBT 50A sample. This may be because of complex nature of the final product.

DISCUSSION

The varied amount of gain was observed in 1 to 50 Avarthana of Ksheera Bala Taila. The gain was ranging between 0% - 4.62% v/v volume wise and 0.27% - 5.49% w/w weight wise. But, an average gain of 2.24% v/v was observed in total 50 Avarthana of Ksheera Bala Taila.

The consistency and colour get changed in succeeding Avarthana. After 25th Avarthana, whole end product was semisolid in consistency like Ghee, on cooling.

The dark red colour gets diminished and changed gradually into dark pink colour in 10th Avarthana whereas on further diminishing it attained cream colour after 35th Avarthana. This may be because of the concentration gradient of the bio constituents of Atibala as well as milk fat, which superimposed over the colouring constituents (attributed by an ingredient Manjista, used in Murcchana) in successive Avarthana.

The interesting observation noted was, after 19th Avarthana, where in contrary to the Taila paka siddhi lakshana- Phenodgama, Phena shanthi lakshana was observed suggestive of

Ghrita paka siddhi[5]. Though this lakshana was found on gradual change after 13th Avarthana itself, it was clearly visible after 19th Avarthana. This may be because of gradual conversion of milk fat into ghee.

The Krishna Tila Taila that was having a specific gravity of 0.9112 at 40°C was reduced to 0.9107 after Murcchana. On further declining it reached to 0.9102 in KBT 1A which became 0.9096 at KBT 7A and remained stable till KBT 50 A where the sp. gravity was 0.9093, very nearer to the Sp. gravity of Ghee. The marked changes were observed in the Refractive indices. Krishna Tila Taila having a R.I of 1.4730, declined to 1.4725 on Murcchana. In KBT 1A, R.I which was 1.4710, further decreased in each Avarthana and attained a stable R.I of 1.4620 in 36th Avarthana. It remained same till 50th Avarthana. This R.I was also very nearer to the R.I of Ghee (1.4610).

There was a little percentage of decrease in the values of Loss on drying in successive Avarthana. Krsna Tila Taila having an Acid value of 0.75 reached to a peak of 5.91 on Murcchana. The value found a biphasic change in further Avarthana. MT taila which was having a Saponification value 190.44, increased in KBT 1 A (192.02). It reached to a higher value of 199.88 in 7th Avarthana where as in 50th Avarthana, the Sap. value was 198.50.

A varied percentage of Unsaponifiable matters were detected in the study samples. 0.61% w/w, 1.49% w/w, 1.85% w/w and 0.47% w/w were the Unsaponifiable matters of MT Taila, KBT1A, KBT7A, KBT50A respectively. The decreased Unsap. matter reported in 50th Avarthana sample in contrary to the expectation, may be because of its complex nature.

CONCLUSION

The gradual increase in the temperature in each stage of Taila paka, suggestive of the reduction of water content in each stage; also, the stable temperature at the final stage (5th stage) may be because of the nearer boiling point of Oil or Ghee. The concentration of the bio-constituents of Atibala and milk fat get increased in each Avarthana.

The conversion of liquid consistency in to semi solid mass (on cooling) in successive Avarthana suggestive of gradual conversion of milk fat in to Ghee. The change in the colour in successive Avarthanas may be due to the increase in the concentration of bio-constituents of Atibala and gradual conversion of milk fat in to Ghee. The gradual shift from Taila paka siddhi lakshana (‘Phenodgama’) to Ghrita paka siddhi lakshana (‘Phena shanti’) in 19th

Avarthana, suggestive of the accumulation of more milk fat (Ghee) in the final products. Avarthana technique of Taila Kalpana will help to procure a potent oleaginous formulation of desired potency.

REFERENCES

1. Acharya Sharangadhara, Adhamalla, Pandit Kashirama. Sharangadhara Samhita Dipika Gudhartha Dipika. ed. Varanasi; Chaukhambha Orientalia, 2002; 212-5.
2. Acharya Nischalakara, Chakrapanidatta. Chakradatta Ratnaprabha Commentary.1st ed. Jaipur: Swami Jayaramdas Ramprakash Trust, 1993; 413-4.
3. Vagbhata, Astanga Hrudaya with Vidyotini Hindi commentary by Sri Kaviraja Atrideva Gupta edited by Vaidya Yadu nandan Upadhyaya. 11th ed. Varanasi: Chaukambha Orientalia, 1993; 426.
4. Agnivesha, Charaka, Chakrapanidatta. Charaka Samhita Ayurveda Dipika, Commentary. 8th ed. Varanasi: Chauk hambha Orientalia, 2004; 555.
5. Sharangadhara. Sharangadhara Samhita with the commentaries of Adhamalla's Deepika and Kashiram's Gudartha deepika, edited by Parashurama shastry vidyasagar, 3rd edition. Varanasi: Chaukambha Surabharati Prakashan, 1983; 206.