

REVIEW OF SNEHA-KALPANA**Dr. Anand Kumar Maurya*¹, Dr. R.N. Bilas² and Dr. Anjana Dwivedi³**

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ABSTRACT

According to Achary Charak every matter in this universe can be used as medicine.^[1] In Ayurveda Sneha kalpana is used for treatment of different diseases from ancient period. Sneha Kalpana is a group of products of medicated taila and ghrita. This class of formulations is reported to treat a very wide range of diseases among patients of all age groups. Sneha Kalpas manufactured in Ayurvedic pharmaceuticals are used extensively for medicinal as well as cosmetic purposes. It is one of the widely used techniques in Ayurvedic drug industry to achieve solubility of both fat-soluble and water-soluble extractives into the oil medium. It is the only Kalpana which is used through all four modes of administration of such formulations, i.e. pana, abhyanga, nasaya, and basti.

KEYWORDS: Sneha Kalpana, Kalka, Paka, Kwatha, Siddhi Lakshana.

INTRODUCTION

Sneha kalpana is derived from five basic or fundamental kalpanas. Thus it is kept under derived kalpana (Upkalpana), which consists of mainly Kalka & Kwatha Kalpana.

Sneha kalpana is made up of two words Sneha & Kalpana.

Sneha- The term Sneha has been derived from root word “Sniha” which means love, smoothness, cordiality, oiliness, etc.^[2]

The word Snehana described by Ayurvedic texts, is a process which produces fluidity, oiliness or unctuousness, softness and smoothness in the body. The substance through which the Snehas are obtained generally named as “Sneha dravyas”. Ghrita, Taila, Vasa and Majja are four Sneha which is commonly used.^[3]

The Sneha dravyas are widely classified according to their properties and actions in samhita period.

The substances which have following properties are kept under the ‘Sneha Varg’.^[4]

1. Guru (heaviness)
2. Sheeta (cold)
3. Sara (mobility)
4. Snigdha (unctuousness)
5. Mand (dullness)
6. Sukshma (fineness)
7. Mridu (softness)
8. Drava (fluidity)
9. Picchila (sliminess)

Classifiaction of Sneha Dravyas

Sneha Yoni

Acharya Charak classified the Sneha dravyas according to their source of origin.

1. Sthavara(vegetable origin)
2. Jangam (animal origin).^[5]

1. Sthavarasneha

It is obtained from useful parts of the plants viz. fruits, bark, seeds, leaves etc. Seeds of Tila, Eranda, Sarsapa, Atasi, Karanja, Singruka etc. are source of oil of Sthavarasneha.

2. Jangam Sneha

It is obtained from animal, fishes & birds etc. Their milk, curd, ghee, meat, fat & bonemarrow are considered to be Jangamsneha.

Types of Snehas

1. Ghrita
2. Taila

3. Vasa

4. Majja

They are collectively called 'Chatusneha' or 'Mahasneha'. These are the best snehadravayas and among them Ghrita is best Sneha.

Ghrita

It reduces aggravation of pitta & vata and is beneficial for rasa dhatu, shukra dhatu and ojas. It has sheet guna (cooling), mridukaram (softening), svaraprasadanam (improve voice) & varna prasadanam (improves complexion).

In Ayurveda it is mention that ghrita is a rasayan (anti oxidants), netrahit (good for eyes), agnideepak (stimulant for digestion), twachya (good for skin), medhya (enhance memory), vajikarak (increase sexual power), deerghayu (longevity) and protects body from various diseases.^[6]

Taila

Taila reduces vata but at the same time does not aggravate kapha. It promotes strength of body, is beneficial for skin, warm in nature, gives firmness to the body and cleans genital tracts.^[7]

Vasa

Vasa is used for treatment of trauma, fractures, earache, headache, wounds and prolapse of uterus. It improves the vigor of person, provides oleation to the body and is useful for those who practice physical exercise.^[8]

Majja

It helps to increase physical strength, increases sperm count, hydration of body and maintain body fluids. It increases specially strength of bones.^[9]

Guruta (heaviness) of Sneha

Ghrita < taila < vasa < majja^[10]

KALPANA

"Kalpanam upyogartham prakalpanam sansakranamiti". (Chakrapani)^{p[11]}

Kalpana means samskarana of bhesaja according to uses of Samskrita Bhaisaja or yojana (planning). To make useful drugs from raw drugs is called kalpana.

Hence kalpana is the process through which a substance is prepared in to medicine form by using some raw materials according to the physician's requirement. The Ausadhakalpana is prepared by different methods, processes, techniques etc. are the methods applied for the crude drugs. All these processing result in transformation of good pharmacological actions to that substance (Lending other properties to the substance is known as samskara) it's called as 'Gunantaradhanam'.

Usually processing techniques are performed by dilution, application of heat, cleansing, churning, storing, Maturing, havouring, preservation in container etc. AcaryaCarka and Kasyapa's concept regarding importance of samskara of Bhesaja 'Even Medicine that is not prepared properly turns to visa in contrast if visa is processed according to rules and regulations, it can be used in the form of medicine'

Definition

Sneha Kalpana can be defined as the pharmaceutical process to prepare oleaginous medicaments by the combination of Kalka, Sneha and other Drava-Dravyas in the specific proportion and sequence by subjecting to a unique heating pattern and duration to fulfill certain pharmaceutical parameters, according to the need of therapeutics.

Historical Review of Sneha Kalpana

(1) VEDIC PERIOD

Chronicled Vedas are the source of knowledge and Ayurveda is a part of it. Athervaveda mention about Pivaspaka for snehakalpana, where Vishadravyas are used in the processing. Havi and Ajya are also mentioned for Ghrita in Yajurveda also. The description of ghrita in the mantras of yajurveda is mentioned (Yaju.21/22).

(2) RAMAYANA PERIOD

The use of SanjeevaniBooti by Sushenbaidhya for treatment of Laxaman Shakti is the indication of complete development of bhaishajyakalpana. The use of ghrit, animal fat, plant resin, lavan, churna, maans, rakta, dhumrapaan, nasya, etc., as medicine are also mentioned in this period (Vinay Pitak 'bhaishajyaskandha', Mahavagg 6-215).

The preservation of death body was also in vogue in this period. After death of King Dasharatha, father of lord Rama, his body was kept on oil tub (TailaDroni) till the arrival of Bharat (Valmiki's RamayanAyodhyakand surge 66, Sloka 16).

(3) KAUTILYA ARTHASHASTRA

According to this shastra construction of pharmacy building should be north- west direction of that area.

Punishment for adulteration in dhanya, sneha, kshar, lavan, gandh, etc. was 12 Pan.

(4) CHARAK SAMHIHA

- Acharya Charak told two types of Sneha yoni – Sthavar and Jangam. (ch.su.13/9).
- Chaturvidhsneha – ghrita, tail, vasa & majja (ch.su.13/13).
- Properties of chaturvidhsneha (ch.su.13/14-17).
- 24 Sneha Pravacharana (ch.su.13/23-25).
- Sneha paakvidhi & sneha siddhi lakshan (ch.vi.7/26).
- Definition of general methods of snehapaak (ch.k.12/101).
- Types of snehapaak, their siddhi lakshana & uses (ch.k. 12/102-104).

(5) Sushruta Samhita

In this Samhita Acharya has described ‘Sneha paka’ in chapter chi. 31. Sneha kalpana elaborately described in Susruta Samhita. Susruta was first mentioned about Sneha kashayas. Specific preparations like Shatdhautaghrita, Sahastrapaka Taila etc. are also highlighted in this treaty. At Chikitsa-Sthana Sushruta enumerates types of Sneha, process of preparing Sneha Kashaya, Sneha siddhi Lakshana, types of Sneha paka, uses of Sneha and evil effects of Sneha.

(6) Astang Sangraha

Acharya Vagbhatta has described Sneha under chapt 25th of sutra sthan as sneha Vidhi. Ashtanga Samgraha and Ashtanga Hridaya both treatises mentioned Sneha Kalpana with some changes from former treatises.

(7) Chakradatta

Clinical uses of Tailas and Ghritas are mentioned in this text. Different medias are also used in the preparation of Sneha kalpas.

(8) Sharangadharsamhita

Acharya Sharangdhar has discussed details of Sneha Kalpana in a separate chapter. 6 This treaty deals with method of preparation, proportions, uses, types of Pakas and Sneha Siddhi Lakshana etc.

(9) Gadanigraha

Separate chapters of Sneha kalpana Tailadhikara, Ghritadhikara are included by Acharya Shodhala.

(10) Sahastrayoga

The treaty owned by the Kerala Vaidyas also elaborated the ratios and different Ghrita and Taila preparations. 135 Ghritas & 96 tailas are mentioned in it.

(11) Bhiasajya Ratnavali, Brihad Yog Tarangini, Yoga Ratnakar

These treatises clearly described about Sneha murchhana. Method of preparation of Sneha Kalpana is also elaborated by Acharya Govind Das Sen.

SNEHA PAKA

Depending on the source of heat given for Sneha Paka, it can be classified into-

- Niragni Sneha Paka
- Sagni Sneha Paka.

Niragni Sneha Paka/ Suryapaka/ Adityapaka^[121]

In this method heat is not given during Sneha Paka. The Sneha is exposed or kept under natural source of heat i.e. sun light for a specific time. This method is employed where the drug is sensitive to heat and volatile in nature. The first example of this is found in the preparation of Kasisadi Ghrita. Adhyamalla mentions to keep the Sneha mixed with Kalka and Kasaya exposed to the sun rays for 7 days.

Eg. Kasisadi Ghrita (S.S.M. 9/51-57)

Stree Kutaja Patra Taila (Anubhoota Yoga)

Sagni Sneha Paka (General method of Preparation)

Sneha Paka process may be divided in three phases.

- (1) Sneha Murchhana
- (2) Sneha Paka
- (3) Paka Siddhi Kakshana

1. Sneha Murchchhana^[13]

Murchhana is a special pharmaceutical procedure, before subjecting the drugs to Sneha paka, Sneha is supposed to undergo one particular procedure called as Sneha Murchhana. It is

applied for both Taila and Ghrita. It is considered as one of the Samskaras of Sneha. By this Samskara, Sneha acquires specific pharmaceutical as well as therapeutic property.

Bhaishajya Ratnavali is the first text, which described the importance and method of Murchhana process.

Objectives of Murchchhana –Murchhana may be performed to achieve the following objectives.

- *Amadoshaharatwa* – removal of ‘Ama’ which can be correlated to the ‘moisture content’ which can be directly related to rancidity problems.
- Removal of bad odour of crude oil.
- Sneha will acquire the capability to receive more active principles.
- Stability of the Sneha is also supposed to impart appealing colour to the Taila.
- May alter the solubility and absorption of the finished product.

2. Sneha Paka

After completion Sneha murchhana, Sneha paka is done with desired drug. Here specified amount of Kalka & Drava dravyas are added and subjected to moderate heating till the liquid portion get evaporated. There is different opinion available regarding the method and time of addition of Kalka & Sneha during Sneha paka.

Constituents of Sneha Pak

1. Sneha Dravya- Oil/Ghee
2. Kalka Dravya – Paste of Drugs
3. Drava Dravya – Water, Kwatha, Swarasa, Kanji, Ksheer, Dadhi, Takra etc.
4. GandhaDravya – perfuming agents

According to Sushruta^[15]

Sneha = 4 Part

Kalka = 1Part

Drava = 4times of Sneha

Acharya Sharangadhar^[16]

Kalka = 1part

Sneha = 4 times of Kalka

Drava = 4 times of Sneha

Rules for peperation of Sneha Kalpana according to the

I. Nature of KalkaDravya

II. Nature of liquid media

1. Nature of Kalka Dravya^[17]

- If the kalka is Pushpa, then it should be taken $1/8^{\text{th}}$ of Sneha because the potency of Kalka is more and is soft also and water should be 4 times of sneha.
- If the Kalka dravyas are not mentioned and only the Kwathadravya are mentioned then the Kwathadravya should be taken to prepare Kalka for the preperation of Sneha kalpana.

2. Nature of liquid media^[18]

Nature of liquid media	Kalka Dravya	Proportion of liquid media
Jala	$1/4$ part of Sneha	4 times of Sneha
Kwatha	$1/6$ part of Sneha	4 times of Sneha
Swarasa	$1/8$ part of Sneha	4 times of Sneha
Ksheer, Dadhi, Mansa Rasa, Takra	$1/8$ of Sneha	Water 4 times of sneha
No specific liquid or Drava is mentioned	$1/4$ of Sneha	Water 4 times of sneha
Drava dravya > 5	$1/4$ of Sneha	Each liquid should be same as that of Sneha
Drava dravya < 5	$1/4$ of Sneha	Each liquid should be same i.e. 4 times of Sneha
Only milk	$1/8$ of Sneha	Milk 4 times of Sneha
Milk with other liquid media	$1/8$ of Sneha	Milk same as Sneha

Preperation of Kwatha (Kashaya) for Sneha-paka

In ancient literature there is immense description of preparation of decoction. The word Sneha Kashaya for the first time found in Sushrut Samhita and later bhoja Tantra.

While preparing Kashaya the ratio of water depends upon

- Nature of drugs
- Quantity of drugs

Table: Preperation of Kwath according to Nature of drugs.

Sr. No.	Nature of drug	Water to be added	Reduction	Example
1	Mridu	4 parts	$1/4$	Guduchi
2	Madhyam	8 parts	$1/4$	Aragvadha
3	Kathinya	8 parts	$1/4$	Dashmoola
4	AtyantaKathinya	16 parts	$1/8$	Padamaka

Table: Preperation of Kwath according to Quantity of drugs.

Sr. No.	Quantity of drug	Ratio of water	Reduction
1	1 Karsha to 1 Pala	16 parts	$\frac{1}{4}$
2	1 Pala to 1 Kudava	8 parts	$\frac{1}{4}$
3	1 Prastha to 1 Khari	4 parts	$\frac{1}{4}$
4	1 Tula	1 Drona	$\frac{1}{4}$

Table: Preperation of Kwath according to different Acharyas.

Author Name	Parts of drugs	Parts of water	Reduction	Name of Kasaya
Sushruta	1 part	8 parts	$\frac{1}{4}$	Sneha Kashaya
	1 part	16 parts	$\frac{1}{4}$	Sneha Kashaya
	1 Tula	1 Drona	$\frac{1}{4}$	Sneha Kashaya
Bhoja	1 part	4 parts	$\frac{1}{4}$	Sneha Kashaya
Sharangdhar	Mridu- 1 part	4 parts	$\frac{1}{4}$	Sneha Kashaya
	Madhya & Kathinya- 1part	8 parts	$\frac{1}{4}$	Sneha Kashaya
	AtyantKathin- 1 part	16 parts	$\frac{1}{4}$	Sneha Kashaya
Chakradatta	1Karsha to 1 Pala	16 parts	$\frac{1}{4}$	Sneha Kashaya
	1 Pala to 1 Kudava	8 parts	$\frac{1}{4}$	Sneha Kashaya
	1 Prastha to 1Khari	4 parts	$\frac{1}{4}$	Sneha Kashaya

Sneha Pakapatra (vessel)

Sellection of Patras are decided according to the type of snehapaaka. In preperation of medicated oils ancient sages used Iron, copper and earthen vessel. Now a days stainless steel vessels are using in many pharmacies. The vessel should be wide mouthed with proper depth in order to avoid spilling out of the oil during preperation. The vessel should not alter the physical constituents of the formulation. Dravi is used to stir the mixture constantly and carefully to make sure that the Kalka does not stick to the bottpom which results in carbonization.

Types of Heat

Almost all Acharyas prefers Mandagni for Tail Paka.

Duration of Sneha Paka

According to Acharya Sharngdhar the preperation of ghrit, tail or guda should not be completed within one day. Longer the duration of preperation gives better absorption of fat soluble content of ingredients.

Bhaishajya Ratnavali mentioned, duration of Sneha paka according to the nature of liquid media used.

Table: Duration of Sneha Paka.

Sr.no.	Nature of liquid media	Duration
1	Mamsa Rasa & Vreehi Dhanya	1 night
2	Ksheera	2 night
3	Swarasa	3 night
4	Takra & Arnala	5 night
5	Kashaya of Mula & Valli	12 night

3. Types of Sneha Paka & Sneha Sidhhilakshana

- Mridupaka
- Madhyampaka
- Kharapaka

1. Mridupaka: This is the first stage of Snehapaka- When Kalka becomes gum like in consistency during Snehapaka it is regarded as Mridupaka. If the Sneha and Kalka can be distinctly observed than it is MriduPaka. In this stage Kalka is sticky on touch due to the presence of trace amount and produces cracking sound when kept on fire. The Taila collected at this stage of likely to constrain fewer amounts of fat soluble active principles.

2. Madhyamapaka: This is the second stage of Snehapaka when the Kalka becomes similar to "a kind of Avaleha like" and does not stick to the Darvi then it is said to attain Madhyampaka. When the Kalka becomes soft and non sticky it is Madhyamapaka. If Kalka does not yield any Drava and soft in consistency then it is said to be Madhyamapaka. In this stage Ghrita & Kalka both will be free from moisture content. The Ghrita which prepared by the Paka is likely to be rich soluble contents.

3. Kharapaka: This is the third stage of Snehapaka. When Kalka attain a state where it cannot be rolled into Varti, instead it breaks into smaller pieces. When the Kalka attain slightly blackish colour and becomes slightly hard in consistency. This paka is resultant of excess heating. The Taila collected at this stage is meant for external application.

Table: Types of Sneha-paka according to different Acharyas.

Charak Samhita ^[19]	Harita Samhita ^[20]	Sharangdhara ^[21] Samhita/Vagbhatta/Sodala
1. Mridu 2. Madhya 3. Khara	1. Mridu 2. Chikkana 3. Madhya 4. Vishesh	1. Ampaka 2. Mridu 3. Madhya 4. Khara 5. Dagdha

Sneha Siddhi Lakshana**According to Sushruta**

- Should not produce any sound on fire.
- Oil produces adequate amount of foam but foam should subside in case of ghee.
- A specific smell, color and taste of kalka & kwatha should be present in the prepared oil or ghee.

According to Sharngdhara^[22]

- After being rolled in between the fingers kalka get transformed into the Varti.
- The kakla should be non sticky.
- No sound is produced when the kalka&sneha is exposed to fire.
- Frothing occurs during tailapaka while frothing subsides in ghritpaka.
- A specific smell, color and taste of kalka&kwatha should be present in the prepared sneha.

Dose:- According to Sharangdhar – 1 pala

According to Bhaishajya Ratnavali –

- Uttam matra -1pala
- Madhyam matra -3 tola
- Heena matra – 2 tola

Shelf Life of Siddha Sneha

According to Ayurveda – 16 months

According to Drugs & Cosmetic Act – 3 yrs

DISCUSSION

Bhaishajya Kalpana divides the Kalpas in Ahar and Aushadh Kalpa. Sneha Kalpana are described under the Aushadh Kalpa and is said a Upkalpana of Panchvidha kashaya Kalpana. Two process of Sneha Kalpana i.e. Sneha Murchhana & Sneha Paka are described in the Ayurvedic texts. The murchhana process aggravate the active properties of Sneha (ghrita & taila). Thus presently most of the Sneha Kalpanas are prepared after murchhana. The process removes the unpleasant smell as well as Ama Dosha of base Sneha (ghrita/ Taila). Sneha Kalpana is the preparation prepared by using 1part of Kalka dravyas, 4parts of Sneha dravyas and 16parts of Drava dravya. The above ratio for Sneha Kalpana is vary according to different

Acharya or according to nature of Kalka dravya and Drava dravya. The mixture is boiled at Mandagni until Sneha-siddhi Lakshana are attained. According to Acharya Charak Sneha-paka is dividing into Mridu, Madhya & Khara Paka. Some other Acharyas are described about Ama-paka, Chikkana-paka, Dagdha-paka also. For different types of Sneha-paka specific Sneha-siddhi Lakshana are described. Sneha Kalpana is an exclusive dosage forms which is treating very wide range of diseases of all age groups by internal or external use. Thus Sneha Kalpana have miraculous therapeutic use in Ayurvedic system of medicine.

REFERENCES

1. Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su. 26/12.
2. Shabdakalpdrum Chaukhambha Surbharti Prakashan, Varansi.
3. Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su.22/10.
4. Ashtang Hridaya, Acharya Vagbhatta, commented by Arundutta, Chaukhambha Sanskrit series, Varanasi, A. H.Su. 16/1.
5. Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su.13/9.
6. Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su. 13/14.
7. Harak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su. 13/15.
8. Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su. 13/16.
9. Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol I Chaukhamba Subharati Prakashan, Varanasi, Ch.Su. 13/17.
10. Ashtang Hridaya, Acharya Vagbhatta, commented by Arundutta, Chaukhambha Sanskrit series, Varanasi A.H.Su.6.
11. Chakrapaani, Chakradutta, commentry by Shri Jagdishwar Prasad Tripathi, Chaukhambha Sanskrit series, Varansi.
12. Adhamalla, Kashirama. Comm. of *Dipika & Gudartha Dipika on Sarangadhara Samhita*, Nirnaya Sagar Press, Bombay, 1931. Sh.M. 9/51-57.
13. *Bhaisajya Ratnawali, Siddhiprada* Hindi comm. by Siddhi Nandan Mishra, Chowkhamba Surbharati Prakashan Varanasi. Bh.R.5/1295.

14. *Sushrut samhita Ayurved-tattva-Sandipika by Kaviraj Ambika Dutta Shastri, Chaukhamba Sanskrit Sansthan, Varanasi. Su Chi.31/10 & Sh.M 9/1.*
15. *Sushrut samhita Ayurved-tattva-Sandipika by Kaviraj Ambika Dutta Shastri, Chaukhamba Sanskrit Sansthan, Varanasi. Su.Chi. 31/8.*
16. *Sharngadhar Samhita, Jiwanprada commentary by Dr Shilaja Srivastava Choukshambha Orientalia, Varanasi, 1982. Sh.M. 9/1.*
17. *Adhamalla, Kashirama. Comm. of Dipika & Gudartha Dipika on Sarangadhara Samhita, Nirnaya Sagar Press, Bombay, 1931. Sh.M. 9/11.*
18. *Sharngadhar Samhita, Jiwanprada commentary by Dr Shilaja Srivastava Choukshambha Orientalia, Varanasi, 1982.Sh.M. 9/6,7.*
19. *Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol II Chaukhamba Subharati Prakashan, Varanasi, Ch.K.12/103.*
20. *Harita Samhita, by Pt. Hariprasad Tripathi, Chaukhambha Krishnadas Academy, Varansi. 4-2/1.*
21. *Sharngadhar Samhita, Jiwanprada commentary by Dr Shilaja Srivastava Choukshambha Orientalia, Varanasi, 1982. Sh.M9/15,16 A.H.K.6/19/5.*
22. *Charak Samhita, Brahmanand Tripathi- Charak Chandrika, Hindi commentry vol II Chaukhamba Subharati Prakashan, Varanasi, Ch.K.12/102, Su.Chi.31/12-13, Sh.M.9/12-13.*