Review Article

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CRITICAL REVIEW ON AVALEHA KALPANA AND ITS DIFFERENT DOSAGE FORMS

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ABSTRACT

Avaleha Kalpana is one among the widely used dosage forms in Ayurveda. Its appreciable qualities like long shelf-life, agreeable taste, easy administration, high nutrient contents, better potency etc. made it more acceptable and popular among Ayurvedic community. Avaleha Kalpana is considered as the modified form of Kashaya Kalpana, which is one among the basic five preparations of Ayurvedic pharmaceutics (Panchavidha Kashaya Kalpana). Different dosage forms are included under Avaleha Kalpana which includes Rasakriya, Phanita, Khanda Kalpana, Sharkara Kalpana, Gudapaka Kalpana which differs in its physical form and palatability. Vast variety of formulations such as Rasayana Yogas, Vrushya Yogas, Shamana Yogas etc. are made into Avaleha forms which own it's on space in Ayurvedic pharmaceutics.

Keywords: Avaleha, Different dosage forms, Khandakalpana, Rasayana, Ayurvedic pharmaceutics

INTRODUCTION

Avaleha Kalpana is the Upakalpana of Kashaya Kalpana. It is prepared by adding sweetening agents to Kashaya or other liquids and by heating until it attains proper confirmatory signs. Now days Avaleha formulations are famous not only in India but also in other countries either as medicine or as food supplement due to its high nutritional benefits and easy administration. Acharyas like Charaka, Sushruta and Vagbhata have mentioned different Avaleha Kalpana as indicated for different ailments especially for rejuvenation.

Etymology

Preparation which is in semisolid forms neither too thick nor thin and which can be licked is called 'Leha'. Word Avaleha is derived from 'Lih Dhatu'and 'Aswadane Kriya'[1].

Definition

According to Acharya Sharangadhara,[2] decoctions etc. preparations are heated further to obtain Avaleha and Rasakriya which are in thicker consistency. According to Acharya Charaka[3], Preparations which are made by heating sugar syrup etc. sweet substances up to a specific proportion and are consumable by licking is called 'Leha'.

Synonym

Various synonyms are given according to the consistency [4] such as,

- Lehya
- Leha
- Avaleha
- Rasakriya
- Ghana etc.

Basic contents of Avaleha in General

- **Liquid medium** (Drava Dravya)
- **Substrate** (Madhura Dravya)
- **Medicinal part** (Aushadha Dravya or Kalka Dravya)
- **Adjuvants** (Prakshepa Dravya)

Liquid medium

Medicated liquid ingredient is prepared as per the requirement which often acts as base for sweet syrup preparation. The medium can be prepared using unctuous substances like oil, ghee, etc. (Sneha Dravya) or else with non-unctuous substance like decoction, water etc. (Asneha Dravya). Commonly used unctuous substances are cow ghee and sesame oil which may be used for frying the pulp and for maintaining proper consistency of the ingredients, which helps the further steps of the preparation to be proper. It is also providing added benefits like antioxidant property and gives multi-nutritional benefits with prolonged shelf life. Other liquids like fresh herbal or fruit juice, milk, water etc. are also used according to the formulation. These liquids act not only as a medium for proper cooking of the ingredients but also help in the extraction of water-soluble active principles into the formulation.

Substrate

Commonly used substrates in Leha Kalpana are honey, sugar candy and jaggery. Sugar and jaggery acts as sweetening agents and are used to prepare sweet syrup which is the base of the formulation. Honey is one among the main adjuvants and is added after complete self-cooling of the final preparation to avoid adverse effects when it is heated. Along with medicinal benefits adjuvants also act as preservatives and increase the shelf-life of the formulation considerably.

Medicinal part

According to the formulation, the herbal bolus (Kalka Dravya) made of fine powder is fried in ghee or is added as such. It provides major part of essential chemical constituents. Also, the Kalka part acts as a 'thermal regulator' in the entire process of preparation. If Kalka quantity is not mentioned, it is said to add 1/4th of the liquid medium as per general rule.[5]

Adjuvants

Adjuvants are in the form of fine powder which is added at the time of attaining Paka. Properties like Teekshna, Ushna, Laghu etc. are common in most of the adjuvant drugs which will helps to eliminate Amatva and thus by improving better metabolism and absorption. By reducing extra water content and by its inherent anti-oxidation and self-preserving properties adjuvants will improve the shelf life of the preparation. In addition, it will enhance the odor and texture which makes it more appealable and palatable. Aroma and volatile rich drugs like Twak, Ela, Patra etc. if used as adjuvants it should be added after cooling of the preparation in order to prevent losing of volatile contents and active principles which are sensitive to heat.

General method of Preparation of Avaleha Kalpana

Equipment like wide stainless-steel vessel, spatula, fine sieves, fire source, filtering clothes, essential drugs etc. should kept ready. In large scale production units super-heated steam jacketed vessels are used for heating purpose, electric mixing machine and mechanical sifters are used for stirring and sieving respectively.

Process of preparation

The liquid base like juice (Swarasa) or decoction (Kashaya) should be prepared and the prescribed sweetening agents like jaggery (Guda), sugar candy (Khanda Sharkara), sugar (Sharkara) has to be added and dissolved by continuous heating and stirring over mild fire in a steel vessel. The sweetened blend should filter through a double layered cloth for removing the physical impurities present in it. Again, it has to be boiled and reduce till it attains thicker 2-3 thread consistency which is considered as one of the Paka Lakshana. Ghee or oil if any should be added to the blend before the Paka Lakshana. After attaining proper Paka Lakshana, the vessel has to be taken out of the fire and fine powdered medicinal substance (Prakshepa Choorna) should be added little by little and stirred well to a homogenous mixture. Once the preparation gets cooled, honey if mentioned has to be added and mixed well. The confirmatory tests of Lehya Kalpana are presented in Table 1.

Dose, Adjuvants, Shelf life and Time of administration of Avaleha Kalpana in general are mentioned in Table 2.

Different dosage forms included under Avaleha Kalpana

a) Rasakriya

The term 'Rasakriya' is attributed with multifold meanings. It is an individual dosage form as well as represents synonym for Avaleha. Other synonyms are Ghanasatwa, Ghanavati and Avaleha.

Definition

According to Acharya Sharangadhara[10], Rasakriya is the one which is obtained by further heating of decoction etc. preparations into a thicker form.

Confirmatory test for Rasakriya

- Dilution of Rasakriya should not reduce its potency.
- Product should attain the shape of wick if rolled in between fingers.

General method of Rasakriya preparation

According to Acharya Dalhana on Susruta commentary

- Rasakriya is correlated with 'Phanita' and is commonly called as 'Kakavi'.
- Rasakriya is prepared by boiling one part of drug with 8 or 16 parts of water in mild fire and is reduced till 1/8th or 1/16th part of liquid remains.
- Filtered using a clean dry cloth and is further boiled and reduced until it attains thicker consistency as that of Phanita.[11]

b) Phanita

According to Acharya Bhavamishra[12] Fresh juice, decoction etc. liquids are heated with prescribed quantity of sugar till it attains honey consistency in concentrated form is called Phanta. Another type of Ikshu Vikara which is prepared by boiling filtered sugarcane juice in an iron vessel till it attains honey like consistency is also called as Phanita. It is said to be stored in an earthen vessel. According to Acharya Susruta[13] Phanita is having properties like Sweet in taste, heavy for digestion, sticky consistency, have nourishing and non-aphrodisiac properties and will aggravates all Doshas.

c) Khanda (Granular preparations)

These are granular preparations which are obtained by heating slightly further after the attainment of Avaleha Paka. The word Khanda or Khandaka means fragment, a part or piece which represents the form and nature of the product. The basic ingredients, ratio and method of preparation of Khanda are as same as that of Avaleha Kalpana. While preparing Khanda sweet syrup is heated continuously till it attains three to four thread consistencies for attaining granular form.

Advantages of khanda Kalpana

Long shelf-life as it contains less moisture content. So the chances of fungal infestations are less. Moreover, it is more convenient for packing, storage, dosage fixation and also has better palatability.

d) Sharkara (Syrups)

Direct Sharkara Kalpana reference is not available in Ayurvedic Classics. Acharya Yadavji Trikamji later introduced this dosage form in 20th Century to the Ayurvedic pharmaceutics. These are prepared by saturating or concentrating sucrose solution which are made into syrup consistency. 66.7 % of sugar concentration is expected in the solution.

General method of preparation

According to Acharya Yadavji Trikamji; To the preparation like Hima, Phanta, Arka or Kwatha double quantity of sugar is added and boiled over mild fire till it attains honey like consistency. Confirmation is done by observing one to two thread consistencies. Later it is filtered and stored in dry, clean containers.

e) Gudapaka

The preparations in which Guda as main ingredient is included under Gudapaka Kalpana. Guda is having excellent binding capacity with appreciable nutrient benefits. Two types of Guda Kalpana can be made with or without processing in fire (Agni Sidda and Anagni Sidda). In Agni Sidda heating in fire is involved whereas in Anagni Sidda, Oushadha Dravyas pounded and mixed well with Guda which is the binding agent. Dose, Adjuvants and Shelf-life of different dosage forms are mentioned in Table 3.

Table 1: Avaleha confirmatory tests

Signs before attaining Paka (Asannapaka)	Rationality	Signs after attainment of Paka (Sidha Lakshana)	Rationality
Thread like appearance when pressed and released between fingers (Tantumatva)	Free of moisture	Imparts fingerprint when pressed between two fingers (Peeditomudra)	Free of moisture content
Sinks in water (Apsu Majjana)	Proper bond and consistency	Formation of proper odour, colour and taste (Gandha Varna Rasodbhava)	Usage of genuine ingredients for the preparation.
Proper consistency and hardness (Sthiratva)	Proper bond between ingredients	Soft to press (Sukhamarda)	Fineness of powder
Sticking to the spatula (Darvi Pralepa)	Proper bond and consistency	Soft to touch (Sukhasparsha)	Fineness of powder
When put on water doesn't floats (Kshipto Na Plavate)	Proper bond between the ingredients and thus by attaining mass		
When put on water, sinks and adhere in bottom (Kshiptastu Nishchala)	Evaporation of water content and attaining proper mass		

Table 2: Dose, Adjuvants, Shelf life and Time of administration of Avaleha Kalpana in general

Dose (Matra)	One Karsha to one Pala, according to Roga-Rogi Bala[6]
Adjuvants (Anupana)	Milk, Sugarcane juice, decoctions, water or other liquid medications[7]
Shelf-life (Saveeryatavadhi)	One year[8]
Time of administration (Sevanakala)	For Urdhwa Jatrugata Roga– At evening time with suitable Anupana For Adhobhaga Roga– Before food[9]

Table 3: Dose, Adjuvants and Shelf-life of different dosage forms

Dosage form	Dose	Adjuvants	Shelf-life	Examples
a. Rasakriya	1 Pala (48 g)[15], 1 Karsha (12 g)[16]	Cow's milk, decoctions, other medicated liquid preparations[14]	1 year[17]	Guduchighana[18], Darvirasakriya[19], Babbularasakriya[20]
b. Phanita	Dose, adjuvants and shelf-life same as that of Avaleha[21]			
c. Khanda Kalpana	1 Karsha[22] (12 g)	Cow's milk, water, other medicated liquid preparations	1 year[22]	
d. Sharkara Kalpana	1 Pala (48 g)[23]	Cow's milk, water, other medicated liquid preparations	1 year[24]	Vanapsa Sharkara, Parusaka Sharkara, Tulasi Arka Sharkara, Ajamodarkasharkara[25]
e. Gudapaka Kalpana	1 Karsha (12 g)	Cow's milk, decoctions, other medicated liquid preparations	1 year[26]	

Modern review of Avaleha Kalpana

According to modern pharmaceutics, Avaleha can be correlated with Syrups, elixirs, linctus and confections.

- Syrups: Concentrated sugar solution or sucrose is dissolved in water or other liquid media to obtain syrups. Concentration of sugar will be 66.7% in this medium. Syrups are used for masking disagreeable taste of ingredient drugs, also as flavors or vehicle for other medicinal preparations.[27]
- Elixirs: Elixirs are sweet, pleasantly flavored sweet hydro-alcoholic liquid preparations which are administered orally. 5-40% Ethyl alcohol is the main ingredient of elixirs and it may also contain glycerin, sorbitol, propylene glycol, sugar, other preservatives etc.[28]
- Linctus: Linctus are sweet, viscous liquid medicinal preparations commonly having sedative, demulcent or expectorant properties. Majority of cough syrups constitutes this form that gives smoothening effect for mucous membrane of throat.[29]
- Confections: Confections consists of a drug mixed with honey or syrup. It may be used as an excipient for pill masses also. They are soft solid mass, which contains one or more medicinal components so as their palatability and easy usage will be enhanced.[30]

Advantages of Avaleha Kalpana

Avaleha can serve as potent rejuvenators (Rasayana) in healthy individuals as well as eliminate diseases (Vyadhiharatva) in diseased ones especially in nutritional deficiency disorders.

Vast varieties of Shamanayogas, Rasayanayogas, Vrishyayogas etc. can be cited with Avaleha dosage forms in classics. They serve with antioxidants and hence promote health key factors in lickable form without any synthetic preservatives. Avaleha contains significant amount of sugar which are added as an ingredient acts as a natural preservative and thereby increases shelf-life of the formulation without adding any artificial external additives. As the word Avaleha itself denotes the formulations

which are 'lickable', vast percentage of drug absorption is being taking place in the oral mucosa itself, as they are administered by licking or chewing. The metabolism and absorption of Avaleha starts from the mouth itself as high glucose, fructose etc. sweetening agents are present. Semi-solid dosage form such as Avaleha, Confectionery based forms etc. are intended to provide drug absorption via the oral cavity. Oral mucosa is having short-recovery time from traumas or damages and heals by itself which reduces effects of adverse drug reactions induced by long term topical drug delivery[31]. The oral trans- mucosal route has significant potential for drug delivery and the next level of absorption takes place in the stomach where gastric lipase hydrolyzes fats into fatty acids and glycerol. Because of fewer Langerhans cells compared to external skin the possibility of all allergic responses is also limited in oral mucosal drug delivery[32]. The oral mucosa is highly hydrated and vascularized which facilitates drug dissolution and allow the drug to gain direct access to systematic circulation via capillaries and venous drainage[33]. Moreover, the small surface area of the oral membrane helps in sustained drug release, especially for high potency drugs[32].

CONCLUSION

Avaleha Kalpana, being a secondary formulation of Kashaya has several advantages in pharmaceutical preparations and therapeutics. Its multiform utility has gained the mass acceptance and further modification of Lehya into Khandapaka and granules have made it more appreciable by the needy people.

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