



ROLE OF AGNI INVIEW OF PAKA IN AUSHADHA NIRMANA-A REVIEW

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ABSTRACT

Agni in the form of heat energy is a prime factor for Aushadha Nirmana. Requirement of heat energy to Aushadha Nirmana depends on the Paaka Siddha Lakshanas. Amount of Agni administration takes an important role Starting from Pancha Vidha Kashaya Kalpana to Bhasma Nirmana. Hence Paaka Siddhi Lakshanas with nature of Agni, its source like Puta etc..& types of Agni in olden days that are mentioned in the Classics & Necessity of Standardization in advanced present era has been reviewed here.

INTRODUCTION

Ayurveda has given foremost importance for the Agni and has described 13 types of Agni. They are 5 Bhutagni, 7 Dhatwagni, 1 Jatharagni. For the Aushadha Nirmana, Agni in the form of heat energy is a prime factor. Agni Taapa, Bhanu Taapa are the two main Classical methods for the preparation of medicines. Amount of heat required for the preparation was enumerated classically based on the Siddha Lakshanas that is called as 'Paaka'. Paaka is derived from 'Pach+Bhave' dhatu and 'dhajn' pratyaya which suggests all 7 types of heating like Bharjana, Talana, Swedaha, Pachana, Taandura, Putapaaka¹. Agni plays an important role for the Samskara of any Dravya. "Samskaro hi nama gunantaradhanam hi uchyate"². Hence Acharya Charaka also highlighted "Toya, Agni Sannikarsha"³ for the Dravya

Samskara. As a preliminary step to Aushadha Nirmana, Dravya shodhana also needs Agni

Samskara but mainly Panchavidha Kashaya Kalpanas and their Upakalpanas, Parpati, Pottali, Kupipakwa Rasayanas are the main medicinal preparations which require heat energy in a specified manner. During ancient time although there was no equipment to measure heat gradation, various grades of heat were described like Low, Medium, High, Extremely high. Concept of Puta is also an authenticated example for this. In some cases specific sources also mentioned. Our Acharyas had explained the requirement of Agni mainly on "Paka siddha Lakshanas" in the dravya. So Here an attempt is made to overview on Agni inview of Paka for the Aushadha Nirmana.

AIMS & OBJECTIVE

- To review the concept of Agni & Paka in Panchavidha Kashaya Kalpana & Rasoushadhis.
- To review the ancient heating source system .

MATERIALS & METHODS

Review of Literature is done from Bruhatrayees, Laghutrayees, Rasaratna Samucchaya, Rasatarangini and other authenticated sources.

*Dependent Factors of Agni for Aushadha Nirmana

1. Dravya which are going to be processed
2. Paatra
3. Source of Heat
4. Form of prepared medicine 5. Consistency of prepared medicine
6. Therapeutic requirement.

* Types of Agni

Various types of Agni are described in our Classics

A) 6 types of Agni

While explaining Arka Kalpana, Arka Ravana has explained 6 types of Agni.⁴

Sl No	Type of Agni	Total time taken	Qty of fuel ie sasara heavy wood, interms of holding.	Feature
1.	Dhumagni (Smoky no fire)	2yama (6hrs)	Not mentioned	Without any flame if there is huge amount of fumes
2.	Deepagni(2-4 times of dhumaagni)	1&half Yaama(4.5 hrs)	2 part of the quarter of 1 Mushti	If the flame of Dhumagni is increased 2-4times
3.	Mandagni (4times Deepagni)	1 Yama (3hrs)	Quarter of 1Mushti	If the flame of Deepagni is again increased to 4 times
4.	Madhyamaagni (between deepagni & Mandagni)	2 Yama (6hrs)	½ Mushti	The Agni in which the flame is inbetween Deepagni and Mandaagni
5.	Kharaagni (5 times Madhyamaagni)	1 Muhuurtha (45 mins)	2&1/2 Mushti	This is a complete Agni used for all the purposes
6.	Bhataagni (high burning flame)	1 Muhurtha (45mins)	Not mentioned	The Agni in which the flame spreads all over the bottom (high burning flame) of the vessel is considered as Bhataagni.

B. 3 Types of Agni

It can be explained with the co-relation of Puta

- 1) Mridu Agni – Lavuka , Kapotha Puta
- 2) Madhyamaagni – Kukkuta, Varaha Puta 3) Teevraagni – Gaja Puta, Mahaputa.

*Sources of Heat

Various sources of heat used in classics during ancient time and Pharmacies now a days

- Fire wood, Coal, Cow dung cakes, Diesel, Kerosene, Electric current, LPG gas, Gobar gas.
- The media of heat transfer is Thermic fluid and the Steam

* Importance of Puta for Agni Taapa and also for Paaka.

The one which is an indicative of proper 'Paaka' of Rasaadi Dravya is called 'Puta'.⁵ It is an unit of heat. Basically, there are 3 types of Puta based on source of heat energy.

1) Surya Puta – example- Surya puti Pravala pishti, Bhanupakitha Loha bhasma

2) Chandra Puta – example – Pravala bhasma

3) Agni Puta.- As per the present study, only highlighting about the 'Agni Puta' here. In olden days upala ie cowdung cakes were used as for the source of heat or Agni. Because Upalas that too 'Vanyopala' were the maximum heat giving substance & retainment of heat also seen maximum in them. Means the 'Swaanga Sheetata' in a gradual manner can be seen in upalothpatthi Agni. They were easily available at that time due to rich Gosampath in our country. Hence our Acharyas widely practiced Upalas for Rasoushadhis mainly in Bhasma

Nirmaana. Our Acharyas have Standardized the heat giving method based on number of Upalas and made proper construction method for burning Upalas ie pit size dimensions etc. Based on this Trividha Agni has been described.

a) Lavuka Puta

- 4tola

1) Mridu Agni

b) Kapotha Puta –8 Vanopalas

2) Madhyamaagni

a) Kukkuta Puta – 100 Vanopalas

b) Varaha Puta - 500 Vanopalas

3) Teevraagni

a) Mahaputa – 1500 Vanopalas

b) Gajaputa - 1000 Vanopalas.

- In general the ancient authors recommended 10-100 Putas for many rasa dravyas for their purification or for incineration. Incase of Abhraka Bhasma , explained in Rasendrasara Sangraha⁶

1) 10-500 Puta - Vaajeekaranaartha

2) 100-1000 Puta- Rasaayanartha

Now a days due to the non availability of Upalas, & developed more advanced thermo regulating instruments, in all pharmacies it is almost replaced by Electric muffle furnaces.

So temperature setting is in controlled manner.

* Review of Agni in view of Paka for different Aushadha Kalpanas

1) Swarasa Kalpana

Fibrous drugs require Putapaka to yield Swarasa. Here Kalka rupa Dravya is going to be heated indirectly. Kalka is covered by 2 Angula Patra and above it is 1 Angushtha matra Godhuma Churna etc Lepa. Quantity of heat required to it is 'Lepasya Angaara Varnatha'.⁷ It means outer layer lepa should become like red hot burning Coal. But type of Agni ie Mridu/Madhya/Teekshnagni is not mentioned. It might be Madhyama or Teekshnaagni. For example Kutaja Patra putapaka, Shunthi putapaka, Surana Putapaka etc.

2) Churna Kalpana

Drugs like more malleable needs to be roasted / Bharjana in Mandaagni before making them into powder. For example Hingu, Kupeelu etc.

3) Kwatha Kalpana

Irrespective of Mridu, Madhyama, Kathina Dravya, heat should be maintained through out the process is 'Mandaagni'.⁸ Heat should be administered till the 16 parts of water containing 1 part of Dravya comes into 1/8th part. For example Aragwadha Kwatha, Panchabhadra Kwatha Bhunimbadi Kwatha etc.

Incase of any Upakalpanas,

Upakalpana	Requirement of heat in terms of Paka
Pramathya ⁹	Heat should be given till 8 parts of Jala containing 1 part of Kalka reduced to its Half.
Yavaagu ¹⁰	Heat should be given till 64 Pala of water containing 4 Pala of Dravya reduced to half.
Yusha	Heat should be administered till 1 Prastha of Jala containing 1 pala
Paana	Heat should be administered till 64 parts of water & 1 part of Dravya reduced to half
Ushnodaka ¹¹	Based on therapeutic use , Heat should be administered for According to Ach. Sharangadhara, <ul style="list-style-type: none"> • Vataghna – Till Udaka comes to 1/4th Part • Pittaghna- Till Udaka comes to 3/4th Part • Kaphaghna- Till Udaka comes to half According to Ach. Sushruta,
	<ul style="list-style-type: none"> • Vataghna- Till udaka comes to 3/4th part • pittaghna – Till Udaka comes to 1/2 • Kaphagna – Till Udaka comes to 1/4th part
Ksheera Paaka ¹²	Heat should be given till 8parts of Ksheera & 4 times to Ksheera should be Jala, 1 part of Dravya should come to Ksheeraavashesha.

4) Phaanta Kalpana¹³

Jala is heated and made into Ushna Jala, According to Deepika Vyaakhyakara , Some opines that Half reduced Jala should be taken. Pounded Dravya is added to it So that Dravya comes into contact with the Taapa present in Ushna Jala.

5) Mantha Kalpana (Upakalpana of Phanta) ¹⁴

Sheeta Jala with the drugs is churned. Here also indirectly heat is given. The emergence of heat while churning or friction is enough requirement of heat energy for the Mantha Kalpana. **6) Avalehya Kalpana¹⁵**

Definition of Avalehya itself says that reheating of Kwathadi ie Swarasa, phanta , Kalka etc. Dravya with sitha or Guda & adding Churna dravyas. Heat should be administered till the kwatha and Sitha or Guda comes to Supakwa Avastha ie origin of Tantu (thread like). “*Daarvya Sanchalanena Tantu iva drishyate Tena mridiyamaano anguligrahi bhavateetyarthaha.*” & when the mixture is dropped to the bowl containing water it becomes like mass and no spreading in the water. This is the exact sign to stop the administration of heat energy. & can add Churna. Thus ,here heat energy is administered till the mixture is made into semisolid form means to suitable for licking.

7) Agni in Vati, Gutti, Guggulu Kalpana¹⁶

Agni should be administered as preparing for Kwatha & reheated by adding specified amount of guggulu ,Guda or Sharkara till the mixture comes to the consistency of Lehya. In practical 4 thread consistency should come. Guggulu is a gummy material hence less time is required to get desired Paaka compared to Lehya Paaka , then add churna and can be performed vati. In Sharangadhara Samhitha, in total of 21 Gutikas 8 are of Agni Siddha . They are Bahushaala guda, Mandura vataka, Pippali modaka, Yogaraja guggulu, Kaishora guggulu, Gokshuradi guggulu, Triphala Modaka and Mashadi Modaka.

8) Guda Paaka ¹⁷

Gudapaaka is similar to Guggulu paaka. Heat should be administered till 1 part of water & 4 parts of Guda becomes like Avalehya Paaka consistency. Here Agni requirement is less than Avalehya Nirmaana. example Soubhagya shunthi Paka, Musali paaka etc.

9) Khanda Kalpana¹⁸

Here, Agni is needed for Kwatha Kalpana if specified,(For ex in Shatavari granules) & then frying the Kalka or churna Dravya with ghrita. Heat should be administered till the Paaka comes to 4-5 thread consistency in practical. Paaka should be more than Avalehya Paaka. For example, Narikela Khanda, Haridra Khanda.

10) Sneha Kalpana

Sufficient heat energy is needed as a first step to perform any Panchavidha Kashaya Kalpana ie Putapaakitha Swarasa, Kashaya, Phanta etc. as a base. Then based on necessity 3 types of Sneha can be obtained with the administration of variant heat energy. Paaka can be assessed by the Kalka Lakshana.

- 1) ¹⁹Mridu Paakitha Sneha – Ishat Sarasa Kalka
- 2) Madhyama Paakitha Sneha – Nirasa Kalka but Komala
- 3) Kharapaakitha Sneha- Ishat Kathina Kalka
- 4) Aama Paakitha Sneha- If we take out before Sneha Siddhi Lakshana. When oil is sprinkled to Agni ,more chit chit sound will be seen. This is not suitable for therapeutics.
- 5) Dagdha Paakitha Sneha- If heated more than Kharapaaka, this is also not suitable for therapeutics.

11) Sandhana Kalpana²⁰

Sandhana can be achieved by the Agni siddha Kwatha ie Arishta. Incase of Asava or Arishta or any Madya Kalpa, through out the Sandhana kriya temperature should be maintained proper. To maintain an uniform temperature the Sandhana Patra is placed inside the heap of husk, Wheat, Paddy or Underground. Temperature required is 30-35°C.Means more than the Room temperature is required. That’s why in Classics it is mentioned as Vasantha & Sharat Rutu is shreshtha. Hence in sheeta Kala ie Varsha , Hemantha Rutu, Sheeta pradesha like Shrinagar, Dargiling, Nainital it is difficult to perform Sandhana So Now a days Air conditioning room with required temperature is set.

12) For Rasoushadhi Nirmana

Rasoushadhi Nirmana is mainly dependent on Agni. As a preliminary step of all Rasa dravyas need to be undergone for Shodhana. In many shodhana prakara it needs 'Agni Samskara'. Preparation of Bhasma mainly dependent on Agni Samskara. There are mainly 4 types of Rasoushadhis 1) Kharaleeya 2) Parpati 3) Kuupipakwa 4) Pottali Kalpas.

- 1) **Kharaleeya Kalpana** – It doesn't require direct heat. The heat generated while the trituration is enough to yield desired product.
- 2) **Parpati Kalpana** – Here Kajjali is heated in a Loha darvi. And melted Kajjali is poured on a Ghritalipta Kadali patra which is on a Layer of Gomaya step. This should be pressed by a Gomaya Pottali. The source of heat to be used is Badara kaashtha or Khadira Kaashtha. as mentioned in Classics. Because Heat produced by these is Stable for long duration. Mridu Agni of about 115°C- 120°C is required here. Based on the amount of Agni sannikarsha there are 3 types of Paka. Administration of Agni should be based on this.

Paaka	Paaka Kaleena Pareeksha	Paaka Paschaat Pareeksha
Mridu	If Liquified Kajjali attains Mayurachandrika Varna	Parpati is smooth & Solid. It bends, not breaks. Useful for the therapeutics
Madhyama	If liquified Kajjali attains Tailavat consistency	Which easily breaks, but smooth
Khara	If liquified Kajjali attains Raktha Varna	Parpati is rough, hard, breaks into dry powder & reddish . Therapeutically unfit

3) Pottali Kalpana

Here With the reference of General Gandhaka draavana method of Pottali Kalpa, Heat is administered to Iron bowl containing Gandhaka, & Pottali prepared by Kajjali with other drugs solid bolus tied in Silk cloth. Temperature should be maintained just above the melting point of Sulphur (119°C) and well below its boiling point (200°C). So that the paaka of the Pottali is appropriate. Mandaagni should be administered continuously to liquify all the Gandhaka & Pottali gets completely immersed into it. The heating should be continued for 30-60 mins. Pottali siddha Paaka Lakshana are,

- The colour of boiling Gandhaka turns to Vyoma Varna
- The Pottali produces metallic resonant sound when gently hit on any metallic vessel

4) Kuupipakwa Kalpana

Here Aushadha Dravya for ex in Rasasindhura, Dried Bhavita Kajjali is in the Lower 1/3rd part ie about 300gms.of Kaachakuupi which is wrapped with the 7 layers of Vastra with the Multaani mitti ie 2cm. This is kept at the height of 2-3cm from the Lower end in Loha bhaanda filled with Vaaluka. Heat is administered to this set up. Or in Pharmacies electric furnaces are used. In the Pradhana Karma,

Agni	Temp	Duration	Changes in the bottle (About Paaka)
Mridu Agni	150-250°C	6 hrs	2hrs is required to melt Kajjali. Fumes gradually starts to come.
Madhyamaagni	250- 500°C	4-5 hrs	Kajjali starts to boil. Here Neck of the bottle used to block. Again to clear this Taptha shalaka should be used. At one point both fumes and flames subside. and 'Baala Suuryavat' appearance at the base of the bottle when visualized by torch light.
Teekshnaagni	500-650 °C	6 hrs	The bottle is carefully corked here. Here the new compound formed rises up
			and gets collected at the neck of the bottle.

5) Maarana / Bhasma Nirmaana

²¹Bhasma has Paaka lakshanas like Rekhapuurnatwa, Vaaritaratwa, Apunarbhava, Unnamana, Niruttha, Nirdhuma, Shlakshnatva, Susukshma, Gatarsatwa etc. These Lakshnas can be obtained only if the required amount of heat is administered to Samyak Bhaavitha Rasa Dravya. In classics number of Putas required for the Bhasma nirmana has specified.

Here is the list of some references for requirement of heat while making all Rasa Bhasmas to get that Bhasma Siddhi Lakshanas.

Maharasa	Putas
Abhraka Bhasma	minimum 10-1000 Gaja puta
Vaikrantha	8 Gajaputa
Makshika	10 Varaha Puta
Vimala	10 Gaja Puta
Tuttha	3 Kukkuta Puta
Chapala	Intense heat in Vaaluka yantra for 1 day
Rasaka	3 Kukkuta puta
Kasisa	More than 1 Laghu Puta
Kankshi	1 Laghu Puta
Harataala	12 Kapotha puta
Kaparda	1 Gajaputa

DISCUSSION

Aushadha Nirmaana mainly depends on Agni directly or indirectly. If Samyak Paaka siddhi Lakshana is not found then the medicine wont give desired effect. For example Aama Paakitha Sneha, Dagdha Paakitha Sneha. Based on different Paaka, it yields different kind of effect. For example Mridu Paakitha Sneha for Nasya, Khara Paaka Sneha for Abhyanga like so. If Agni has not given sufficient for example in Bhasma it may end in severe hazardous effects. So Agni is a prime factor in Aushadha Nirmana.

Heat depends on source of heat energy, suitable environmental condition etc. Time required to get desired Paaka depends on source of heat, vessel used, quantity of the Dravya, desired form etc. So our Acharyas had mentioned Mridu, Madhyama, Teekshna agni like this. It is different in different conditions. Hence they have mentioned Paaka siddha Lakshanas in the final product. Puta was the unit of heat at that time. Because of its maximum heat giving and step by step becoming Swaanga sheetata quality. Now a days as an advancement in technology , standard temperature gradation can be possible through the researches. Hence almost all the pharmacies use modern heating devices with proper temperature control to attain specific Paaka Lakshanas as described in Shaastras . Paatra also influences for heat supply to the Dravya. In almost everywhere they have mentioned about 'Mruttika Paatra'. Because of its heat retaining capacity. But now a days it has been replaced by Stainless steel.

Niragni preparations like Kharaleeya Rasaayanas, Mantha, Sandhana Kalpana etc also require proper temperature conditions .Hence the Agni Mahabhoota plays an important role for the Paaka everywhere.

*CONCLUSION

Agni plays an important role for the Paaka. Requirement of Agni depends on the Samyak Paaka siddha Lakshanas. Without Samyak Paaka there will be less therapeutic effect and short shelf life. Hence our Acharyas explained about this. For the present era there is a need to standardize the heat measures by using modern technology and gadgets. This article is an attempt to compile the Role of Agni in every medicine preparation having a view about the Paaka.

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