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CRITICAL REVIEW OF IMPORTANCE OF PUTA IN RASASHASTRA

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Abstract:

Administration of all metals and minerals became possible because of the invention of pharmaceutical technology of converting metals and minerals into Bhasmas. Bhasmas are peculiar Rasa preparations in which metals and minerals are processed after various Samskaras (processing) like detoxification, (Shodhana) converting into powders (Jarana, causing decay of metals) and incineration (Marana, killing metallic properties) methods. The process of Shodhana removes impurities which are likely to bring about certain toxic effects. Purified substance, whether it is Rasa-Uparasa or Dhatu after maceration with some drugs, when subjected to heat treatment or puta termed as 'Marana'. the process by which Lauha (shada Lauha all dhatus), are transformed to a microfine stage for easy assimilation in the body (at cellular level), without any untoward side effect is considered to be 'Marana'. The measure of deciding the degree of paka is called as 'puta-paka'. Among the various intermediatory processes involved in the incineration of Lauha, the 'puta' is of paramount importance owing to the property of bringing Lauha to that state from where it cannot be restored further. This process not only removes blemishes but also increases the therapeutic potential of the Lauha. In other words, it is by means of incineration the unwanted metallic properties of Lauha are removed, thus making it suitable for bodily assimilation. This article gives the complete classical review of concept of Puta, its types and its importance in Rasashastra.

Introduction:

The measure of deciding the degree of paka is called as 'puta-paka'. Among the various intermediatory processes involved in the incineration of Lauha, the 'puta' is of paramount importance owing to the property of bringing Lauha to that state from where it cannot be restored further. This process not only removes blemishes but also increases the therapeutic potential of the Lauha. In other words, it is by means of incineration the unwanted metallic properties of Lauha are removed, thus making it suitable for bodily assimilation. The quantum of heat given simultaneously is called as Puta. The word Puta is derived from 'Putati' means 'to connect' or 'to join',[1] it may be in concern with connecting two sharav (earthen pots) containing the aushadhi dravya to prepare a sharav samput. Bhasma is also termed as Mritaloha, which is defined in the classical text of Rasatarangini as- when the particles of bhasma are rubbed between thumb and the index finger enter the grooves of the fingers and do not come out easily then it is called Mritaloha.[2] Therapeutic efficacy of Lauha increases with the increase in number of putas. Accordingly for curing ailments 10- 100 putas while for Vajikarana 10-500 and for Rasayana 100-1000 putas are generally advocated in case of Abhraka. According to some authors Puta should be given till the bhasma becomes microfine so as to float over the surface of water or till it gets properly incinerated or becomes niruttha. (i.e. do not retain its parental form) According to Rasa Tarangini minimum puta and maximum 1000 putas are required for incineration of Lauha. Ayurvedic Formulary of India recommends 60 putas for incineration but further recommended to give 100 or 1000 puta for better efficacy. Ayurveda Prakash has clearly indicated Gajaputa for all types of Lauha bhasma.[3]

The process of Putana where the metal is subjected to heating system in a closed chamber in the absence of air after being treated with some herbal liquid media. The herbal material present in the liquid media gets carbonized during the heating process and this carbon helps in reducing the metal properly. This process is hastened by the quantum of heat that has been applied for.

Putana or the methods of incinerations is an important aspect for estimating therapeutic efficacy of a metal and it is the process of Putana that brings micro fine stage to a metal thus making it suitable for short acting pharmacokinetics.[4] Hence its literature study is very important.

Aim and Objectives of Puta

1. To provide a particular temperature pattern (no less or more heating).
2. Reduction in particle size.
3. To provide a suitable atmosphere for desirable chemical reaction.
4. To make the material ductile, smooth & homogenous.
5. To potentiate the material for therapeutic purposes.
6. To make the material absorbable, colloidal, adaptable & assimilable form.
7. Putas generates following properties into the bhasmas doshavinasha, gunaprakarsha, niruthatva, dipana, varitaratva, apunarbhava, laghutva, shighravyapti, more effective than jaritaparada, rekhapurnatwa, vichitragunadipti etc.[5]

Material and Methods:

Definition of Puta:

The term which indicates the exact state of paka of Rasadi dravya is called as Puta. Incomplete or hyper-processed state of paka is not appreciated.[6] In Rasatarangini, while describing Puta, specific use of Upala i.e. cow dung cakes is found.[7]

Utility of Puta:

Puta helps to eliminate doshas from dhatu as well as it enhances its properties.[8] Also, due to Puta, bhasma passes the expected bhasma pariksha like Niruttha, Varitar, Rekhapoorna and due to puta, dosha in metal are removed and there is enhancement of guna in it. Bhasma also acquires deepana property, laghava, sheeghra vyapti (spread quickly in the body), etc properties.[9,10] After giving more number of puta, Bhasma acquires its specific colour.[11]

Types of Puta:

Puta are divided into different types depending upon the source of heat, direct and indirect application of heat, source of fuel and of course its own dimension. Variation in the temperature pattern due to different size of pits and number of cow dung cakes further divides Agniputa in the different types.[12] Ancient scholars recommended different Puta for the different Material like Gaja Puta for iron. Some scholar recommended first Puta of maximum temperature followed by Puta of lower temperature for the preparation of quality bhasma of Abhrak, Tamra and Lauha. Reverse method of applying puta was told in Swarana, Rajat and Naga bhasma preparation.

Puta can be classified into 3 types i.e.; Surya puta, Chandraputa and Agni puta based on the nature of heat given. Based on the intensity of heat given Agni puta is again divided into 3 that is Mrdu agni, Madhyama agni and Tivra agni.[13] Lavaka puta and Kapota Puta can be included under Mrdu agni, Kukkuta Puta and Varaha puta included under Madhyama Agni and Gaja Puta and Maha Puta under Teevra Agni.

Puta Vidhi:

Samputa, upala and chakrika are the materials used in the procedure of Puta. The place where pellets or chakrikas are kept during the incineration is called Samputa. Upala is used to generate heat in Putas. The synonyms of upalas are Pistaka, Chana, Chagana, Utpala, Upala, Girinda, Upalasthi, Karisa and Vanopala. In small putas, gorvara (the dried cow dung powder and husk of paddy) can be used instead of upalas. After levigation, the material is made into uniform round shape which is called chakrikas or pellets. These pellets should be dried under shade in order to avoid very fast loss of moisture and hence cracking.

Drug should be collected first. In order to remove the chemical and physical impurities Shodhana should be done. Churnikarana of the material should be done for decreasing the particle size. After Churnikarana, Bhavana (Trituration) of the drug should be done with juices or decoctions of herbs. Then small, flat, round,

pellets called Chakrikas are made, dried and kept inside an earthen plate (sarava) and closed with another. Clay smeared cloth should be utilised for sealing the earthen plates and should be kept for drying. Then with the help of cow dung cakes the sealed earthen plates are heated.

Sr. No.	Name of the Puta	Dimension		Max. Temp	Uses
		Classical	Metric system (cm3)		
1	Mahaputa	2 hasta	91x91x91	1000°C for 1 hr	For the maran of Loha, Vajra, Abhrak, Vaikranta, etc.
2	Gaja puta	1Rajahasta	57x57x57	1000°C for 1 hr.	For the maran of Abhrak, Kapardik, Godanti, Kukkutandatwak, Shankha, Shukti, etc.
3	Kukkuta puta	2 vitasti	46x46x46	1000°C for 1/2 hr	For the maran of Swarna, Rajat, Naag, Vanga, Mukta, etc.
4	Varaha puta	1 Aratni	42x42x42	1000°C for 1/2 hr	For the maran of Shankha, Shuki, Varatika, Swarnamakshik, etc.
5	Laghu puta	8 Upala	23x23x23	800°C for ½ hr	For the maran of Parad
6	Bhudhara puta	-	20x20x20	140°C for ½ hr	For the jaran and maran of Parad
7	Gobara puta	1 Vitasti (Ft)	23x23x23	400°C for 4 hr	For the maran of Parad
8	Bhanda puta	Brihat Bhanda	-	400°C for 8 hr	For Gandhak Jarana
9	Valuka puta	Brihat Bhanda	-	400°C for 6 hr	For Gandhak Jarana

Discussion:

Acharyas have described various methods for the preparation of Dhatu bhasma. The ideal temperature for the bhasmikrana of Dhatu is around 1000^0C which can be achieved easily through Mahaputa and Gajaputa.[14] The properties of bhasma prepared through puta includes

- ❖Churnatva - Breaking the material to a powdered state by providing external heat to the metal,
- ❖Laghava – Lightness,
- ❖Apunarbhava – Unable to regain its original form,
- ❖Gunadhikya – increase in Potency.
- ❖Anapsu Majjanam –The obtained bhasma dose not sink on water,
- ❖Rekhapurnata - Occupying the inter ridge spaces of the finger,
- ❖Shighravyapti - Spreading and occupying very rapidly,
- ❖Dipanam - Increasing the appetite.[15]

Previous studies show that there is a marked reduction in the particle size after each and every puta when it is given in proper method. The review of chemical analysis, indicates that percentage of Acid insoluble ash gradually decreases and percentage of Acid soluble ash gradually increases as the number of Puta increases indicating its conversion to more assimilatory form.[16] Bhasmas are considered to reduce the particle size which increases the bioavailability of the drug.

Heat flows from a hot surface to a cold surface when there is a temperature gradient. Fourier's law can be used to explain the conduction of heat through the pellet. The area and the temperature gradient is proportional to the rate of heat flow through a uniform material. So, the shape of pellets is very much important. It should be flat in shape, and thickness must be standard to facilitate the easy flow of heat. Hess's law of thermodynamics can be used to explain the exchange of heat from the puta to the pellets inside the sharava samputa. Whether the process takes place in one or several steps, the amount of heat generated or

absorbed in a chemical change is the same. Several chemical changes take place to the material inside the puta and it gets changed into compound form. The energy of heat absorbed by the material and the energy required for the chemical change are the same inside the earthen plate during putapaka.[17]

Putas should be continued until the bhasma achieves Nirutthatva and Varitaratva.[18] In Ayurved Prakash, specific type of puta is indicated for specific metal as-For the maran of Svarna and Rajat dhatu, Kukkut puta is indicated while for the maran of Tamra, kashtaj agni i.e. heat obtained from burning the stumps of plants is indicated.[19] Acharya Siddinandan Mishra has added to the above reference that for the maran of Abhrak, Mahaputa is indicated while for the maran of Naag and Vanga, Kukkutputa is indicated.[20]

No clear reference is seen in the Rasagranthas regarding the weight and size of the cow dung cakes to be used. Also, no clear mention is seen regarding the relation between the quantity of metal (batch size) and number of cow dung cakes to be used. in Vaidyak Paribhasha Pradip, while describing Maan Paribhaasha, the word 'Sharav' has been explained, as 'Sharavoashtapalam' means sharav is equal to 8 Pala i. e. 320gm.[21] Here, after studying this reference it seems whether it is expected to use 320gm of metal at one time for giving the indicated Puta. Rasaratnasamucchaya mentioned that where there is no indication of specific type of Puta to be given then Puta should be decided after considering the bala or abala of dravya to be processed. It means, type of Puta should be decided by studying the characteristics of the metal. In some classical references of maran, number of Puta is found to be mentioned. But practically, it is seen that the indicated number of puta are not sufficient for preparing its compatible bhasma. Sometimes less number of puta are found to be sufficient for it. Thus, it can be stated that the type of puta indicated for the respective metal can be considered grossly and puta should be given as per the characteristics of the metal and by observing the outcome product after each puta. Heat distribution differs while keeping one sharav samputa and that keeping more than one sharav samputa in one pit. It seems appropriate to use one sharav samputa at a time in a single pit.

Conclusion

Puta is an ancient method used by Acharyas for conversion of metals and minerals into bhasmas. Bhasmas which are considered to have very small size of particles are more bioavailable than their original form. Particle size of Bhasma is inversely proportional to the number of Putas given, means making it more fine. Puta seems to be ideal method for preparation of Bhasma. Various methods are mentioned by Acharyas for the preparation of Bhasma, but among these methods puta seems to be the best method for the preparation of bhasma. So, puta has a unique identified and significant role in Rasashastra.

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