ROLE OF NIRMALIKARAN IN TUTTHA SHODHAN W. S. R. TO RASATARANGINI

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ABSTRACT:
Rasashastra is a science which study metals and minerals, their medicinal properties & formulation. It mainly deals with mercury and then other metals & minerals. They helps mercury in formulations. In Rasashastra number of Samskara mentioned like Shodhana, Marana, Amrutikarana but to know exact effect of Samskara on materials before and after analytical tests are necessary. Shodhana is very important Samskara in Rasashastra it helps to remove impurities and add medicinal properties in material. Tuttha is very important mineral included in Maharasa group. It is copper sulphate chemically. Tuttha can make artificially, but the Tuttha found in nature is mixed with impurities. To avoid such impurities before Shodhana there is one Samskara mentioned Rasatarangini only, known as Nirmalikarana. Physical impurities can washed out with this. There are three type of Shodhana mentioned in Rasatarangini with Bhawana,Nimbu Swaras Raktvarga & Amlavarga. We have mentioned only one type of Shodhan here that is Nimbu Swaras Bhawana for 6 hrs. This paper is enlighten on procedure and it’s analytical changes from Ashuddha to Shuddha, Nirmalikrut Ashuddha to Nirmalikrut Shuddha Tuttha.

Key words: Tuttha, Shodhan, Nirmalikaran

INTRODUCTION: Shodhan concept in ayurveda is from charak samhita, but the importance of shodhana got enhanced from 8th cen. A. D. when ayurvedic scholars start using metals and minerals for medicine preparations. The aim of this procedure is to remove toxicity completely or minimize it and also to increase medicinal properties in it. During shodhana materials are subjected to various procedures like grinding, heating, fomenting, distilling etc. Besides shodhana procedure with organic materials helps minerals and metals to get absorbed in body tissues. For shodhan materials are subjected to liquids either of acidic, alkaline or neutral or oily in nature. Grinding in hot & cold condition also helps in reduction and dispersion particles of materials. Thus, the surface area of the material increase, increasing the contact area with the shodhan dravya. There is also one type of shodhana known as nirmalikarana. Is specifically mentioned for some minerals only in rastarangini (like tuttha and tankana). Its helps to remove mainly physical impurities from materials. According to rasatarangini this nirmalikrut tuttha can use for external application but not for internal. No chemical changes are found in nirmalikrut tuttha. Hence it also use as a pre procedure of shodhana. After nirmalikarana they have said further shodhana.

One of the mineral which we have chosen here is tuttha having nirmalikarana and shodhana both. To study, the changes of substance before and after samskara analytical study is Necessary. Hence current study is enlightened on importance of nirmalikaran with comparison to shodhit tuttha.
Literature Review Of Tuttha: From the bruhattrayi we can see use and reference of tuttha specifically in charak and sushrut samhita. One historical story is also mentioned about origin of tuttha. Once upon time when garuda had taken visha and for its antidote he took amruta and he emitted on the marakat hills. Emesis contains mixture of visha and amruta. This was the historical story for tuttha origin. After bruhattayi the classical texts of rasashastra also mentioned tuttha in there literature. Specifically in rasatarangini tuttha is mentioned in maharasa gana. Tuttha can also prepare artificially that is mentioned first time in rasatangini. The chemical composition of tuttha is CuSO\(_4\), 7H\(_2\)O they contain 7 molecules of water. In sanskrut, tuttha also known as sasyaka. Synonyms of tuttha are tutthaka, tutthanjana, mayuraka, tamragarbha and shikhigriva. In hindi tuttha known as tutiya & in Marathi it is known as morchud. In English tuttha also known as copper sulfate/ blue vitriol. The hardness of tuttha is 2.5 & sp. Gravity is 2.1 to 2.3. Acceptable tuttha for medicine should be like peacock's neck blue, shiny, heavy, slightly oily, this tuttha should taken for medicine preparation.

Types of Tuttha: Rasajalnidhi have mentioned types of tuttha
1) According To Colour:- a] Raktavarna (red) good
   b] Kalika (black) not good
2) According To Findings:- a] Swabhavaj (get in nature)
   b] Krutrim (made artificially)

Need of Shodhana and Nirmalikaran of Tuttha: -

Dosha of Ashuddha Tuttha:
In ayurved prakash they mentioned toxic effect of ashuddha tuttha. Consumption of ashuddha tuttha can cause nausea, vomiting, giddiness.

Nirmalikaran of Tuttha:- This procedure is mentioned only in rasatarangini and it may be use to clear physical impurities. nirmalikrut tuttha having slightly bitter taste, it's good for skin, grahi, produced vomiting, kapha nashak, good for eyes & wound. It also purified the wound of firanga & upadansha. it helps in vartma ,act like kshara.

According to rasatanangini nirmalikrut tuttha is use in formulations which is for external application only. For internal application shodhana is necessary.

Shodhana:-
The procedure in which material gets free from impurities & toxicities and get purified with the help of procedures like mardana, khalana, nirvapana are known as shodhana.

Shodhan of Tuttha: - In rasatarangini there are total 4 types of shodhana mentioned in which three are of bhavana samskara (mardana) and one is of swedana.

Bhavana (Mardana):-
Any metal or churna grind with water, decoction or any other liquid medium is known as bhavana. The liquid quantity for bhavana should be sufficient that churna get wet. As bhavana got complete the Chuna forms consistency of pills & when press it between two fingers it get flat. It is very soft in touch. These are signs of samyak bhavana. If bhavana is not properly given pills consistency will not form & during pressing it they get cracks on corners of pills. And also it is rough in touch. These are signs of asamyak bhavana.

Type of tuttha shodhana with bhavana method according to rasatarangini.
1] lemon juice for 6 hrs.
2] Raktachandan Manjishtha Qwatha for 7 times.
3] Amlavarga Bhavana for 7 times.
Here we have choosen only one type that is Bhavana with lemon juice for 6 hrs.

materials & methods :-
The required quantity of tuttha were procured from dadar pharmacy ,Mumbai

MATERIALS
1] Khalva Yantra
2] Hot Water 
3] Ashuddha Tuttha 
4] Nirmalikrut Ashuddha Tuttha 
5] Glass Funnel 
6] Beaker 
7] Glass Dish 
8] FilterPaper 
9] Knife, Gas 
10] Lemon Juice ( As Per Requirement) 

METHODS:-

All procedures were carried out in dept. RSBK YMT ayurvedic medical college kharghar, navi mumbai

Method 1:- niramalikaran of tuttha 
Method 2:- shodhana of tuttha 
Method 3:- shodhana of nirmalikrut tuttha 

Nirmalikaran Of Tuttha: 100 gram of ashuddha tuttha were taken & powder done. In powdered tuttha 50 ml of boiling hot water were poured. Mixture were properly stirred and prepared. Then solution was filtered with the help of filter paper. Filtered solution kept in glass vessels to stabilize it. Crystals were started forming at the bottom of vessel. After evaporating extra water molecules nirmalikrut tuttha crystals were collected.

Shodhan Of Tuttha (Nirmalikrut/ Anirmalikrut):
The method of both type of tuttha are same i.e. grinding with lemon juice for 6 hrs. first powder of tuttha done in khalva yantra. Then sufficient amount of lemon juice were added in It. And then grinding were started. Procedure was continued for 6 hrs. after samyak bhavana shuddha tuttha were collected. Same procedure were carried out for nirmalikrut tuttha.

OBSERVATION:
All this procedures were carried out and observations were noted

Abbreviation:- 1) Sample 1:- Ashuddha Tuttha 
2) Sample 2:- Nirmalikrut Tuttha 
3) Sample 3 :- Anirmalikrut Shuddha Tuttha 
4) Sample 4 :- Nirmalikrut Shuddha Tuttha

Table No.1- Organolepic Observation:

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Sample 3</th>
<th>Sample 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shabda</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Sparsha</td>
<td>Rough</td>
<td>Rough</td>
<td>Soft</td>
<td>Soft</td>
</tr>
<tr>
<td>Roop</td>
<td>Opaque royal blue colour</td>
<td>Crystalline blue colour with green tinge</td>
<td>Powder form with sea green colour</td>
<td>Powder form with sea green colour</td>
</tr>
<tr>
<td>Ras</td>
<td>Tikta</td>
<td>Tikta</td>
<td>Tikta</td>
<td>Tikta</td>
</tr>
<tr>
<td>Gandh</td>
<td>--------</td>
<td>Metallic smell</td>
<td>Lemon smell</td>
<td>Lemon smell</td>
</tr>
</tbody>
</table>

Table no. 2- Observation of wt. loss during procedure:-

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Sample 3</th>
<th>Sample 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial wt.</td>
<td>100 gm</td>
<td>100 gm</td>
<td>100 gm</td>
<td>100 gm</td>
</tr>
<tr>
<td>Loss wt.</td>
<td>2 gm</td>
<td>4 gm</td>
<td>5 gm</td>
<td></td>
</tr>
</tbody>
</table>

The element analysis done with the help of XRF. The XRF method depends on principles involving interaction between electron beam and x ray of sample. The analysis of major and tress elements of materials by XRF is made possible by the behavior of atom when they interact with radiation.

Table no. 3- Elemental analysis of tuttha by XRF

<table>
<thead>
<tr>
<th>Elements (mass %)</th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Sample 3</th>
<th>Sample 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicon (si)</td>
<td>0.69</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Sulfur (s)</td>
<td>14.70</td>
<td>15.09</td>
<td>14.23</td>
<td>9.46</td>
</tr>
</tbody>
</table>
DISCUSSION: During nirmalikarana of tuttha total 100 gm. Of ashuddha tuttha was taken and after nirmalikaran we got 98 gm. Of nirmalikrut tuttha. Total 2gm. Loss was there. nirimalikarana was mainly to remove physical impurities. We have seen that in ashuddha tuttha there were silicon was present but in nirmalikrut tuttha we didn’t get silica as well as potassium was also absent in it but the sulfur and zinc concentration is more in nirmalikrut tuttha which is 15.09 and 1.91 orderly. colour of nirmalikrut tuttha is blue with green tinge and crystalline structure is there. Silicon were absent in all three other samples except ashuddha tuttha and also potassium were absent in only nirmalikrut tuttha. After started with shodhana of anirmalikrut tuttha we loosed 5gram and during nirmalikrut shodhana of tuttha we loosed 4 gm. But the colour of both shodhit tuttha were same that’s sea green colour. But the percentage of Cu,Zn,S differs. Copper, iron is more in nirmalikrut shuddha tuttha were less in anirmalikrut shuddha tuttha. Were as sulfur, potassium, calcium and zinc percentage is more in anirmalikrut shuddha tuttha than nirmalikrut shuddha tuttha. They both having lemon smell and in soft powder form.

CONCLUSION: From the above results we observed that highest quantity of cu we get from sample 4 but in nirmalikrut tuttha we observe that percentage of sulfur & zinc is more than other samples. Sulfur itself acts like an antibacterial and antifungal and therefore help in wound healing. Zinc directly helps in wound healing. In rasatarangini they have already mentioned niramalikrut tuttha properties that, i it is really good in wound healing of in firanga, upadansha & in netragat climm varma also. and high percentage of sulfur and zinc may help in that. rasatarangini had mentioned that without shodhana, internal use of tuttha is prohibited. In Nirmalikrut Shuddha Tuttha we observed that cu is in higher percentage but zinc and sulfur percentage is very less compared to other samples. tamra is vamak only hence it is beneficial for us. During visha chikitsa where tuttha is taken for vamana. Some of kalpas of tuttha help in firanga, upadamssha by taking this internally. During internal administration may be sufficient percentage of zinc and sulfur should be less. That’s why may be they mentioned shodhan for oral administration. Hence we can state that nirmalikrut shodhit tuttha is more beneficial and advantageous over anirmalikrut shodhit tuttha.

REFERENCE:
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