**ABSTRACT**

Rasashastra and Bhaishajya Kalpana is the branch dealing with the manufacturing of different formulations and for that many types of instruments are mentioned in Ayurvedic classics i.e. Yantra, Moosha, Koshthi etc. Most of the instruments which are directly or indirectly involve in the manufacturing of formulations are included in the Yantra category by ancient Acharyas. These Yantras are having specific principle like Swedana, Mardana, Putana, Kuttana, Jarana, Dhalana, Dhmapana, Pachana, Peshana, Shodhana, Sandhana etc. for specific use. Importance and utility of Yantra becomes clearer when they are studied in classified manner with their respective Karma. In present study “Swedana Karma” is taken into consideration to understand underling Yantra for more bonafied clarity.

**KEYWORDS:** Yantra, Swedana Karma.

**INTRODUCTION**

Word Yantra is derived from root word “Yam”. Verbal meaning of Yam is the controller or regulator.¹ This means an apparatus or instrument for holding, maintaining or fastening the process. Yantra word stands for various meanings as per different fields of subjects. Here for the present concerned, meaning is taken as, “Instruments used for medicine preparation”.

Authors of Rasaratnasamuchchaya have defined Yantra as, by which Swedadi Karma are performed and Parada is controlled is called as Yantra.⁵ Acharyas have described different Yantra, which are based upon specific Karma. When Yantra are studied with their respective Karma, we can understand them clearly. Among all the Karma, Swedana Karma stands first while performing Ashta Samskara of Parada, which itself shows its importance.

**IMPORTANCE OF PRESENT STUDY**

When Swedana process is performed as Samskara of Parada, it purifies Parada by Shitihikarana of underlying impurities.¹ Same process is useful for purification of substances like Somala, Shankha, Shakti etc. and also useful for extraction of Swarasas from the substances like Vasa Patra, Nirguni Patra etc. It makes Dravya Swinna, Shithila and allows Swarasa to get release easily. This process has very wide use in pharmaceutical science and there is wide range of instruments which solve this purpose but very few are in use. Hence, an attempt is made to enlighten Yantra of its class.

**AIM AND OBJECTIVES**

1. To develop better understanding regarding Yantra.
2. To review Rasashaleeya Yantra, designed on the basis of “Swedana Karma”.

**MATERIAL AND METHODS**

Swedadi Karma includes Swedana, Mardana, Uthapana, Putana, Achushana, Avapa, Ekatrikarana, Kuttana, Grahana, Chalana, Jarana, Dhalana, Tadana, Dravana, Dhupana, Dhmapana, Nirgama, Nirgana, Niyantarana, Nirvapa, Nirvahan, Parishrutikarana, Pachana, Peedana, Pruthakkarana, Peshana, Prakshalana, Bandhana, Mrudukarana, Rakshana, Shodhana, Shoshana, Sandhana, Sechana, Shihapana etc.¹⁵

Acharya have developed many instruments to apply specific action on material. Some of them are entirely dedicated for Swedana purpose and some conveys more than one purpose. Yantra which are having capacity to do Swedana Karma are enlisted in below mentioned table.
Table No. 1: Showing different Yantra used for performing Swedana Karma.

<table>
<thead>
<tr>
<th>Yantra</th>
<th>Karma</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ushma</td>
<td>Swedana</td>
<td>R.S., [18]</td>
</tr>
<tr>
<td>Swarasa</td>
<td>Swedana</td>
<td>R.S., [19]</td>
</tr>
<tr>
<td>Bashpa Swedana Yantra</td>
<td>Swedana, Shoshana</td>
<td>R.T., [20]</td>
</tr>
<tr>
<td>Valabhi/ Palabhabi/ Khalabhali</td>
<td>Swedana, Uthapana, Shoshana</td>
<td>R.C., A.K., R.R.S., R.P.S., [21]</td>
</tr>
</tbody>
</table>


(1) Ghata Yantra

Reference

चतुर्दशस्तायातीर्थोऽध्यातिक हस्ती नंतर:।
प्रत्ययामिंद्र प्रक्षिप्ते तदाद्यायनकस्तुतां॥

- R.R.S. 9/ 51

It is a basic part of majority Yantra. It is also called as Ghāti, Aapayyanaka, Rasapayyanaka and Sthali.

Structure

An earthen vessel which can accommodate 4 Prastha (1 Prastha = 64 Tola= 746 g.) of water and neck should be 4 Angula in diameter is known as Ghata Yantra.

(2) Swedani/ Swedana/ Kanduka/ Kundaka Yantra

Reference

स्वेदनयायात्मकः जलं हित्त्वा बायसी बद्धा मुखे हृद्यू॥
तत्र स्वेद्य विशिष्टव प्रत्ययामी च।।
अस्तावालयेद्विन्यामः यन्त्र तत्कन्तुरकामिभ्यम्।।
स्वेदनीयात्मकस्दन्ते प्राहुरेष्व मनोविध्यय॥

- R.R.S. 9/74, 75

In classics, we get same description of Yantra under above titles. They are used as synonyms of each other. It can perform Swedana as well as Pachana Karma.

Parts

1. Sthāli
2. Vastrā
3. Peedhanaka

Structure

A Sthāli half filled with Drava Dravya. Open end of Sthāli is tied with the cloth. Swedyà Dravya is kept on the surface of cloth and covered with Peedhanaka. Pot is then subjected to heat; this apparatus is known as Swedani/ Swedana/ Kanduka/ Kundaka Yantra.

(3) Kunda Yantra/ Kanduka Yantra Bheda

Reference

यद्हा स्वेदनयायात्मम जलं हित्त्वा तुष्ण हित्त्वा मुखे पूर्वे।।
स्वेदयत्व परिशिष्टय विक्षाणं प्रविष्टि स।।
अस्तावालयेद्विन्यामः यन्त्र तत्कन्तुर्म स्तुतां॥

- R.R.S. 9/ 76
Along with Kanduka Yantra we get description of Kunda/ Kanduka Yantra Bheda, it has a minor difference that; open end of Sthali is covered with Trina instead of tying Vastra.

Parts
1. Sthali
2. Trina
3. Feedhanaka

Structure
A Sthali half filled with Drava Dravya, open end of Sthali covered with Trina. The drug which is to be Swedana is kept on the surface of Trina and covered with Feedhanaka. Pot is then subjected to heat; this apparatus is known as Kunda Yantra/ Kanduka Yantra Bheda.

(4) Dola Yantra
Reference
दोला यान्त्र स्वेदना का लगभग यथा।
शस्त्रीय टोटों के द्वारा तितक प्रयोग:।
तथ्यस्य नियोजित तत्त्वियः स्वेदनथवः।
कथा स्वेदनथवहीतनमिति सम्मानः।
- R.R.S. 9/ 3, 4

Almost all Rasa Grantha have described Dola Yantra. Its synonym is Dulli-Stambham which is given in Rasendra Mangala. Dola Yantra is largely used instrument for the purpose of Swedana. It can also perform actions like Ekatrikarana, Pachana, Shodhana and Sanghata.

Parts
1. Sthali
2. Stick or rod
3. Pottali with thread

Structure
Take a Sthali and pour fluid in it up to the half vessel is filled. Make single pair of hole at the open end and adjust a rod within. Tie the Pottali properly at the center of rod. Pottali should neither be touching the bottom nor above the fluid levels. This is subjected to heat from outside at the bottom. Pottali is free for movement in the fluid hence called Dola Yantra.

(5) Ushna/ Ushna Yantra
Reference
हृष्टद्यों समस्तपदार्थ तु भुजाकालवर्णादि लभ्येत्॥
शुष्कायुष्यघात बहुते दोलासमं कृती॥
अथो मन्त्रायनकान्त विशेषाः भोजयता।
सीताकण्ठेऽससतेऽति निस्सर्वदृष्टिरः॥
- R.S.

Parts
1. Sthali covered with Mud-cloth
2. Stick or rod
3. Pottali with thread

Structure
It is having almost same arrangement as of Dola Yantra but the only difference is, Swedya Dravya do not get dipped into Drava Dravya and while heating, only vapors of Drava Dravya come in contact with Swedya Dravya.

(6) Swarasa Yantra
Reference
पुष्पकोशः तीर्थेऽवेदनस्य सहुद्वारा तापमाणि यज्ञाय कामः।
पुष्करं निदमयो योकाहकान्तः दुविषाहिकायाम्॥
इवसत्त्वार्थ भैरवं तत्र ब्रह्म स्मायुष्यमच्छिन्नः।
पुष्पकोशः निदमयो शुष्कायुष्यां तथा दृष्टिर्मिनिष्ठकायां।
उष्णायेऽससतेऽति निस्सर्वदृष्टिरः॥
पुष्करंसत्त्वार्थ शिलेऽति तथा श्रेष्ठ:॥
- R.S.
Swarasa Yantra is specially designed for processing drugs like Bilva Patra, Vasa Patra, Kharjura Patra etc. where extraction of Swarasa becomes difficult because they are having Alpa Swarasa, we don’t get proper quantity of Swarasa without prior Swedana process. This Yantra ensures maximum yield of Swarasa from the processed drug.

Parts
1. Big iron pan
2. Iron container vessel with lid
3. Breaks

Structure
Iron vessel with lid containing Swedya Dravya is kept inside big iron pan by making stand of breaks. Drava is filled in pan, surrounding the container and below lid level. Water should not go inside the container. Then it is subjected to heat.

(7) Bashpa Swedana Yantra\[21\]
Reference:

This instrument is used to perform Swedana on Swarasadi. It is very much helpful while preparing Satva.

Parts
1. Small vessel with holders on outer surface
2. Big vessel

Structure
A big vessel filled with Drava Dravya, other small vessel containing Swarasa, Kwatha etc. and having handles on outer surface which is to be set inside the bigger vessel. Then subjected to heat, it is called as Bashpa Swedana Yantra.

(8) Valabhi/ Palabhal/ Khalabhal Yantra[24]
Reference:

This Yantra is used to perform Utthapana of Parada by Swedana process.
Parts
1. Small Kanta Loha Patra having holders at outer surface
2. Big Loha Patra having holders in inner surface

Structure
Loha Patra with holders at internal surface containing Drava Dravya and another small Kanta Loha Patra having holders on outer surface containing Dravya which is to be Swedita. Adjust smaller vessel hanging inside big vessel by joining holders and then it is subjected to heat.

DISCUSSION
Different formulations are made based upon many principles followed to achieve maximum benefit out of medicine. In Rasa Shastra, Shodhana and Marana are essential process for eradicating the toxicity and to improve therapeutic activities of particular drugs. Different types of Yantra are used for Shodhana, Marana and preparing formulations. Swedana is an important technique of Shodhana and drug preparation. Swedana Sanskara is an important technique in order to achieve Dosa Shishilikarana in Parada. It is also used for Shodhana of various Rasa Dravya like Veikrant, Makshika, Vimala, Tuttha, Gandhaka, Haratala, Somala, Varatika, Manikya, Mukta, Prawala, Turkshya, Pushparaga, Hiraka, Neelama, Gomeda, Vaidurya, Rajavarta, Spatik, Pairojaka, Godanti, Shankha, Shukt, Gunja, Dhattura, Vishamushhi, Jayapala etc. It is a main method for Paka in Pottali Kalpana, which is known as Gandhaka Drava Paka. This procedure is helpful in releasing extractive values like Swarasas and Taila from the raw drug. After this process, material is subjected to Peedana which results in Swarasas Taila extraction.

Kanduka Yantra is described in Ananda Kanda. Author of Rasaratnasamuchaya has described this instrument along with its Synonym, Swedana Yantra. We also get the same description under the title of Kundaka Yantra in Rasendra Chudamani, where Acharya Somadeva has quoted its synonym as Swedana Yantra. The only difference between Kanduka Yantra and Kund Yantra is that Kanduka Yantra Bheda is, open end of Sthali stay covered by Trina instead of tying Vastra. Both are of close type of Swedana method.

Dola Yantra is widely used Yantra for Swedana. When Shodhana of Rasa Dravya is done by Swedana method, it is preferably done in Dola Yantra. Some Acharya consider taking 3 folds of cloth to make Pottali of Swedya Dravya, whereas Rasayana Sara advised 4 folds of cloth. Author of Ananda Kanda quotes Pottali must be touching bottom of the vessel, whereas other authors opine that it should be immersed in Drava Dravya. Usually in Dola Yantra, Pottali is kept immersed into Drava Dravya but not touching to the bottom because if Pottali is kept touching the bottom there are chances of it to get burn. This Yantra is also used to prepare Pottali Kalpana where manifestation of functions like Ekatrikarana and Sanghata are seen.

Arrangement of Ushma Yantra is quite similar to the Dola Yantra, but the only difference is height of Pottali, which is situated above the fluid levels and only Ushma of Drava Dravya affects the medicine during the process. Ushma Yantra is best suitable equipment for steaming prior to extract oil from crushed oily seeds. Dola Yantra and Ushma Yantra both are of open type of Swedana method.

Swarasas Yantra is specially designed instrument to prepare Swarasas. Extraction of Warasas becomes difficult from the drugs like Bilva patra, Vasas Patra, Khajarura Patra etc.; because they are having Alpa Warasas, we don’t get proper quantity of Swarasas from them, without prior Swedana. This Yantra ensures maximum yield of Swarasas from processed drugs. It is a close type of Swedana method.

Bashpa Swedana Yantra is given in Rasatarsangini, its specific use is to reduce Swarasa, Kwathadi and make Satva without harming the contents. When Paka is done in this instrument, material will get the temperature as much as require reducing water contents only.

Structure of Valabhi Yantra is similar to the Bashpa Swedana Yantra but here, vessels are made up from Loha and Kanta Loha. Its main function is Uthapana by Swedana of Parada. When Uthapana is done in Kanta Loha vessel it increases Guna of Parada. According to Rasaratnasamuchaya if Parada is processed by this method it becomes Shada Gunam Yukt. In Rasa Prakasha Sudhakara same instrument is described under the title of Palabharal Khalabharal Yantra. Bashpa Swedana and Valabhi both are of open type of Swedana method. All these instruments can be classified in several categories.

Table No. 2: Showing classification of Yantra in close and open method.

<table>
<thead>
<tr>
<th>Swedya Dravya immersed in Drava Dravya</th>
<th>Swedya Dravya above the levels of Drava Dravya</th>
<th>No direct exchange between Swedya Dravya and Drava Dravya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dola Yantra</td>
<td>Ushma Yantra</td>
<td>Swarasa Yantra</td>
</tr>
<tr>
<td>-</td>
<td>Kanduka Yantra</td>
<td>Bashpa Swedana Yantra</td>
</tr>
<tr>
<td>-</td>
<td>Kunda Yantra</td>
<td>Valabhi Yantra</td>
</tr>
</tbody>
</table>

Table No. 3: Showing classification of Yantra on the basis of situation of Swedya Dravya:

<table>
<thead>
<tr>
<th>Swedya Dravya</th>
<th>Swedya Dravya above the levels of Drava Dravya</th>
<th>No direct exchange between Swedya Dravya and Drava Dravya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dola Yantra</td>
<td>Ushma Yantra</td>
<td>Swarasa Yantra</td>
</tr>
<tr>
<td>-</td>
<td>Kanduka Yantra</td>
<td>Bashpa Swedana Yantra</td>
</tr>
<tr>
<td>-</td>
<td>Kunda Yantra</td>
<td>Valabhi Yantra</td>
</tr>
</tbody>
</table>
In view of combining all, final categorization becomes;

<table>
<thead>
<tr>
<th>Swedya Dravya immersed in Drava Dravya</th>
<th>Swedya Dravya above the levels of Drava Dravya</th>
<th>No direct exchange between Swedya Dravya and Drava Dravya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close method</td>
<td>Open method</td>
<td>Close method</td>
</tr>
<tr>
<td>-</td>
<td>Dola Yantra</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Kanda Yantra</td>
</tr>
</tbody>
</table>

When Swedya Dravya is immersed in Drava Dravya and vessel is open. Drava Dravya does direct exchanges with Swedya Dravya, Gunas of Drava Dravya comes into Swedya Dravya and vice versa, as an example when Visha (solid Phase) and specific Agada (liquid phase) are taken, then exchange in qualities will take place from both the side. Agada will do detoxification of Visha and Visha will be neutralized on/ and get exchange on/ and get evaporate along with the vapors of Drava Dravya. Boiling Drava Dravya softens the covering as well as material of Swedya Dravya. In case of preparing Pottali Kalpana same process is producing Sanghata in the Pottali because Gandhaka has special capacity of binding Parada. When Ashuddha Parada is taken for Swedana, Drava Dravya Kanji will penetrate Parada along with Ashuddhi and make them Shithila which get separated easily by further process. Dola Yantra Swedana is not useful for preprocessing raw drugs for Swarasa or Taila extraction because the extracts will get mix in Drava Dravya.

When Swedya Dravya is above liquid media and instrument is close then Swedya Dravya will be affected by steam of Drava Dravya. Hence it is a close method; effect of steam is higher than the open method. Qualities of Drava Dravya will effect on Swedya Dravya but the contents of Swedya Dravya will not come in to Drava. This technique is used as preprocessing on raw drug for Swarasa extraction. When Swedya Dravya is bigger in size we may use either Trina or cloth as support but if particle size is small then use of cloth is must.

When Swedya Dravya is above the liquid media and instrument is open, in such case also Swedya Dravya will be affected by steam of Drava Dravya but intensity of steam will be lesser compared to close vessel, it generates warm atmosphere in Yantra but not too moist. Pressure factor will also effect on the Swedya Dravya because material is tied in cloth by making Pottali. Such factors create most favorable condition for oozing oil from oily substances hence used as preprocessing for Taila extraction. It is not that dominant regarding other functions of Swedana.

When there are no direct exchanges between Swedya Dravya and Drava Dravya with close instrument, indirect heat is supplied into the Swedya Dravya, by using Drava Dravya as barrier. Controlled heat is carried to the Swedya Dravya. Hence the Swedya Dravya containing vessel is close, residing Moisture in Swedya Dravya itself penetrate the content and provide ease to the extraction of Swarasa. It is very effective method for extraction of Swarasa.

When there is no direct exchanges between Swedya Dravya and Drava Dravya with open instrument then, heat is controlled and transferred by barrier but, the Swedya Dravya containing vessel is open there for fluid/ water portion from Swedya Dravya will get evaporate and extracts are obtained easily without any harm to the final product. For Uthapana of Parada, instrument of same design is used, but the vessel, containing Parada is made up of Kanta Loha. In this case moisture will get evaporate and Guna Vardhana of Parada takes place by Bhujana Samskara.

**CONCLUSION**

One should select the appropriate Yantra, for specific Swedana to ensure best purification, detoxification, yield and Guna Vardhana of Swedya Dravya.

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