**CONCEPTUALIZATION OF KHARALIYA RASAYAN AS CORNERSTONE AMONG AYURVEDIC MEDICINES**

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**WHAT IS KHARALIYA RASA/ RASAYANA**

Literally *Kharaliya* means “a stone for grinding drugs” and “*Rasayana*” means “A medicine

supposed to prevent old age and prolong life with an elixir”.So *Khalvi /Kharaliya Rasayan* are the medicine prepared by specially designed *Khalwa Yantra* i.e.manual grinder which acts as an elixir by prolonging life, preventing old age and curing the diseases

**INTRODUCTION**

*Kharaliya Rasa* is considered to be the oldest form of *Rasaousadhi*. These formulations are entirely prepared and obtained as end products in *Khalvayantra* through the process of trituration, hence named as *Kharaliya* or *Khalviya Rasayana*. . Medicine is prepared by grinding the ingredients in a *Khalwa Yantra* (comparable with mortar and pestle). There are various mercurial preparations where most of the preparations contain the mercury and sulphur in combination called as Kajjali. Other ingredients include dry herbs in powder form as well as purification and *Bhasmikaran* form (i.e incineration) form of other metals & minerals through a complex process. These are imbedded with appropriate quantities of fresh juices of different indigenous plants so that product becomes more potent. The specialty of *Kharaliya Rasayan* lies in binding varieties of drugs into a single molecular form and hereby diminishing the dose and more valuable in their action. Here dosage form is mostly the pills or tablets and sometimes powder.

**SUPERIORITY OF KHARALIYA RASAYAN AMONG OTHER RASAYAN**

The *Kharaliya Rasayana* possess supreme position in comparison with *Parpati*, *Pottali* & *Kupipakwa Rasayana* in terms of its demand, wide range of therapeutic utility & ease of preparation. *Parpati, Kupipakwa* & *Pottali Rasayana* are minimal in numbers while Kharaliya Rasayana are innumerable and most suitably indicated in vast majority of disease condition. Speciality is that other categories of formulations like *Parpati, Kupi Pakwa* *Rasayan* and *Bhasma* can be one of the ingredients in *Kharaliya Rasayan* .eg 1) *Kravyada Rasa* and 2)*Sudhasara Rasa* contain *Parpati* 3) *Chandanadi Gutika* contains *Rasapushpa* etc

**PRINCIPLE OF *KHARALIYA RASAYAN***

 Preparation of *Kharaliya Rasayana* is based on the principle of *Mardana* and *Bhavana* (Trituration*). Mardana* is the process of trituration of drugs to a find state of division with or without prescribed liquid. *Bhavana* is the process by which powders of drugs are ground to a soft mass with liquid substances and allowed to dry.

**a*) BHAVNA***

(R.T 2/49) *Yachchurnitasya Dhatuvadedravyahei sampesiya sosonam*

*Bhavnam tanmatam vigyabhavna cha nigadiyate ||*

 The fine powder of any drug material (i.e *Dhatu* etc *Dravya*) followed with specified liquid i.e enough only to soak the above drug is taken in a clean *Khalva Yantra*. Then the process of trituration is continued until the soaked wet powder becomes dry again. This entire procedure is called as *Bhavna* or one *Bhavna.*

**b) LIQUID QUANTITY FOR *BHAVNA***

(R.T 2/50-51)

In a *Bhavna*, only required quantity of liquid that is enough to completely soak the fine powder of drugs is added and triturated until the powder becomes dry. If any *Kwatha* (decoction) is specified as *bhavna Dravya*, the *Kwatha* has to be prepared by taking coarse powder of the *Kwatha Dravya* equal to that of *Aousadha Curna* whose *Bhavna* is to be given.

Note-Preparation of *Kwatha* for *Bhavna*-The *Kwatha Dravya* along with 8 times water is taken in a clean vessel🡪Vessel subjected to mild fire🡪Boiled till liquid reduced to 1/8 th🡪Later the reduced liquid is filtered through a cloth🡪This filterate used as decoction for *Bhavna* purpose.

(Srg.Samhita Ch-6/6)

*Dravena Yavta Samyak Churnam sarvam plutam bhavet*

*Bhavnayaha pramanam tu----------||*

Quantity of *Drava* for *Churna* should be the total quantity of *Churna* gets submerged with liquid.

**MECHANISM OF MARDAN & BHAVNA (TRITURATION)**

Trituration is originated from the root latin word “trituratio” which means to rub. The act of triturating a drug with any liquid not only condenses the drug particles to a finer state of subdivision but also facilitates the breakage and reunion of bonds in material triturated. As a result of which we find an entirely different compound formation by the end of total trituration. These *Khalwa Rasayan* nurture different secretary organs and endocrine glands and build up all body tissues. The thorough trituration of selected ingredients for a formulation in *Khalwa Yantra* facilities to fulfill these objectives.

**RATIONALITY BEHIND SELECTION OF LIQUIDS FOR BHAVANA:**

Any *Kharaliya Rasayana Kalpa* usually comes with one or more *Bhavana Dravyas*. The criteria behind selection of specific *Bhavana Dravyas* for a particular formulation depends upon their ingredients and desired therapeutic utility. The properties of each drugs & the disease condition in which it has to be administered & later came up with a specific *Bhavana Dravyas* or a set of *Bhavana Dravya* for a particular preparation. On the same ground in *Ayurveda* compound formulation are prepared and after so many trial & error combination methods they are established in clinical application. Some of the possible points to justify the above-

1. **Synergism-** When two or more drugs of similar properties are combined together & processed, they augment the activity of one another to produce an effect which would not have been possible for any of the involved drugs individually. E.g. In case of *Gandhaka Rasayana* preparation, the eleven Bhavana *Dravya* augment the only ingredient that is *Suddha Gandhaka* to make it effective in wide range of disease conditions. Similarly in *Agni Kumar Rasa* preparation, to the set of seven herbo-mineral drugs, the *Bhavana Dravyas* used in *Jambir Nimbu Swarasa*, which itself is magnificient.
2. **Antagonism-** When two or more drugs of opposite properties are combined together & processed, they bring down the ill effects of one another, and in other words they help to harmonizing the *Gurvadi Guna* of one another. At many instances, the *Tikshanta* of the drugs will be greatly reduced. E.g. In case of *Maricha Shodhana*, the *Bhavana Dravya* used is *Amlatakra*; here the *Laghu-Tikshna Guna, Katu Rasa, Katu* *Vipaka* & *Ushna Virya* of *Maricha* is counter-acted by the exactly opposite properties of *Amlatakra* which possess *Amla-Madhura Rasa* & *Sheeta Virya* appetizer by virtue of *Tikshna Guna*, *Amla Rasa* &*Amla Vipaka*
3. ***Bhavana Dravyas*** contributes in getting rid of the any disagreeable taste & unpleasant odour of the end product e.g In case of *Vasanta Malati Rasa*, to the set of five herbo-mineral drugs the *Bhavana Dravya* used are *Draksha Kwatha* which helps to bring in palatability & *Nimbu Swarasa* which adds pleasant flavour to the end product. Similarly in *Rambana Rasa* the *Bhavana Dravya* is *Chinchaphala Rasa*, which removes the un-palatability by making palatable. In *Kaphaketu Rasa- Bhavana* *Dravya* is *Ardarka Swarasa,* which adds good palatability &odour.

In addition to above*, Bhavana Dravya* alleviates the toxic properties in a *Visha Dravyas.* E.g. the poisonous drug *Ahiphena* (Papaversomniferum) is purified by 21 times *Bhavana* of *Sunthi Swarasa*. *Manahshila* is purified by *Nimbu Swarasa* *Bhavana.*

**CHARACTERSTICS OF *SUBHAVITA* & *DURBHAVITA BHAVNA***

After completion of *Bhavna* procedure, *Subhavita* has following characteristics like-

* *Bhavita Curna* can be made into a small round like mass.
* While giving pressure with fingures to *Bhavita* material, it gets pressed
* Touch *(Sparsa)-Mridu*

*Durbhavita* has following characterstics-

* Small round like mass of *Bhavita* material cannot be well formed
* While giving pressure to it, there will be seen cracks in boundary.
* Touch *(Sparsa)-Khara*.

**IMPACT & BENEFITS OF *BHAVNA***

* Makes *Rasaousadhies* absolutely non-toxic.
* Repeated *Samskara* like *Bhavna, Mardan* etc brings about changes in characterstics of *Rasa Dravyas* and then convert them to fine particle size(i.e particle size reduction) thus changing into easily absorbable form through the intestinal mucosa
* The process of *Bhavna* of *Rasaousadhies* with ingredients of plant/animal origin facilities conversion of *Nirendriya Dravya* (inorganic material) to *Sendriya Dravya* (organometallic compound) changing its bio-assimilation and thus forms basis of newer target organ drug delivery system.
* Enhance the therapeutic efficacy so that these could be administered in small dose
* Enhances drug palatability
* It widens the therapeutic utility
* Reduction of hardness
* Attribution of the properties of *Bhavna Dravya* to it.
* *Poorva Karma* for *Marana*

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**KEY FACTORS RESPONSIBLE FOR FORMATION OF NEW COMPOUND IN *KHARALIYA RASAYAN***

* Nature of drug material
* Mass & size of drug particles
* Amount of liquid added
* Pressure applied & rhythm maintained during trituration.
* Time duration & surface area of trituration,
* Humidity & room temperature etc.

**GENERAL PREPARATION METHOD OF *KHARALIYA RASAYANA***:

* Raw materials used – *Rasaadi Dravya* ,*Vanoushadhi* and *Bhavana Dravya.*
* Processing is done in sequence of *Kajjali Nirmana*- mixing of all other ingredients to obtain a homogenous mixture with *Bhavana- Niragni* *Samskara.*
* After specific *Bhavana/ Mardana* in *Khalwayantra*, the end product is obtained which needs to be collected, dried & stored in air tight container for further therapeutic use.
* Final product that is ready to be used form is *Vati*, *Guti* etc.
* If the stored end product is marketed, it has to be neatly labelled with all the details about the preparation as regulated by GMP, which should contains - Name of the formulation in big letters, reference, indication, contents, dose, adjuvant, batch number, reg. no., date of manufacturer, Date of expiry etc.

 **ANCIENT INSTRUMENTS & MODERN EQUIPMENTS USED FOR KHALWI RASAYANA**

***KHALWA YANTRA*-**

*K.Y* which includes both mortar & pestle, is used for pounding/ triturating different types of herbal & mineral drugs.-It is an instrument made of good quality of stone in different sizes and shapes, useful for trituration & levigation process. Used for grinding, powdering and mixing medicine.

2 types of *Khalwa Yantra* is generally used for majority of pharmaceutical procedures they are-A) *Vartulakara* (Circular) *Khalwa Yantra* B*) Dronirupa* (Elliptical) *Khalwa Yantra.*

UTILITY OF *K.Y-*

Pounding or triturating different types of herbal (leaves, roots, tubers etc.) and mineral *(Rasoparasa, Loha* etc) drugs.

*TAPTA KHALWA YANTRA*-It is an open faced mortar having different sizes & shapes –round & oblong. It may be shallow or deep, made of iron/granite. Generally, the mortar is kept over fire during processing of drug..

UTILITY OF *TAPTA K.Y*-Used for *Parad Asta Samskara, Sodhan* of *Rasa Dravyas*.

**MODERN EQUIPMENTS**-

In the present era, refinement is needed in preparing *Khalvi Rasayan* to save man, money, material power. While preparation in large scale some important factors should be kept in mind are fine particles, proper mixing, uniform weight tablets and free from moisture. As bioavailability directly depends upon the particle size of a drug, different *Samskara* play important role.

**LIST OF EQUIPMENTS WITH USE**

|  |  |  |
| --- | --- | --- |
| **SL.No** | **EQUIPMENT NAME**  | **FUNCTION** |
| **1.** | **Disintegrator** | **Used for reduction of particle size of raw material .Size reduction is affected by impact and grinding.** **It is capable of grinding hardest of drugs like Nux-vomica seeds, ginger etc.**  |
| **2.** | **Pulverizer** | **It is a grinding unit of heavy materials, raw drugs, and fineness of product ranging from about 60 mesh to bulk passing through 325 mesh.** **Specially designed for medium fine and fine size reduction with heavy and** **rugged construction. It can be used for minerals.** |
| **3.** | **Ball mill** | **It is very effective for grinding smooth aqueous or oily dispersions by wet grinding .It will give particles of so microns or less. Used to grind brittle drugs to fine powders.** |
| **4.** | **End Runner Mill** | **It can be considered as a mechanical mortar and pestle where the mortar is shallow and the bottom of the pestle is flat rather than round.** |
| **5** | **Edge runner Mill** | **It is useful for reduction of extremely tough & fibrous materials to very fine powder** |
| **6** | **Sieve shaker**  | **Used for separation of fine powder from the coarse powder by using a set of sieves of desired number.Sieves are arranged in descending order.The sieves are shaken either with mechanical or with electromagnetic devices which helps the particles to pass through the sieves.** |
| **7**  | **Polishing pan** | **It consists of circular metal pan mounted somewhat angularly on stand. It is rotated on its horizontal axis by a motor. This gives proper shining to the tablets/*Vati/Gutika* etc.** |
| **8** | **Pill Making machine** | **Uniform weight can be obtained** |
| **9** | **Mixer** | **The equipment used for proper mixing of two or more than two components. It ensures uniformity in composition**.  |
| **10** | **Grinder** | **Is used when particle size reduction and proper mixing both to be achieved. Breaking of particle done by continuous pressure. Here Size reduction is done by impact or blow & shear or abrasion principle.** |
| **11** |  **Vacuum drier, silica gel packs, air tight containers** | **For prevention of moisture** |

**SIGNIFICANCE OF *KHARALIYA RASAYANA***

Prolong shelf life of herbal formulations

Decrease the dosage

Decrease the duration of treatment

Provide bilateral safety and efficacy to both mercury and herbs.

 Enhance the therapeutic efficacy

**EXAMPLES OF *KHARALIYA RASAYAN***

Some common *Kharaliya Rasayan- Arogya Vardhini Gutika, Kasturibhairava Rasa, Kumar Kalyan Rasa, Chandraprabha vati, Chandramrita rasa, Anandabhairava Rasa, Laxmivilash Rasa, Hinguleswari rasa, Vatavidhvamsa rasa, Kamdugdha Rasa, Laghusutashekar rasa ,Vasanta Kusmakar Rasa, Vasanta Malati Rasa, Yogendra rasa* etc.

**CONCLUSION-**

*Kharaliya Rasayanas* are actually the cornerstone of *Ayurvedic* medicine, consisting of multiple independent components added with precise calculations on the basis of *Dosha-Dhatu-Agni* modifications needed to treat certain illness. They are abundant in various classics and their genuine therapeutic use depends on the physician's choice and many factors as per ancient classical texts.