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Dose schedule of *Rasa Aushadhis*

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ABSTRACT

Rasashastra deals with the *Rasa Aushadhis*, the drugs of metallic and mineral origin. Mercury is used in most of the *Rasaushadhis*. The toxicity of Mineral and metallic preparations are reduced to such an extent by various procedures of *Shodhana*, *Marana* etc. that Mercury converts its inherent property of toxicity into medicinal property. *Rasa Aushadhis* works quickly on the body because due to their small particle size, their absorption starts from the oral mucosa itself. The action of drugs depends largely upon the *Anupana* i.e. the vehicle for the drug. *Rasacharyas* have mentioned various *Rasa* preparations like *Bhasmas*, *Parpati*, *Pottali*, *Manduras*, *Karpooras* etc. along with their doses, dose schedule and *Anupana* / *Sahapana* etc. The principles of *Rasaushadhis* when correlated in modern era are found to be scientifically accurate. We may say that *Rasacharyas* had already mastered the science of nanotechnology, purification, action of metabolic catalysts, biotransformation and preservation of medicines. The *Ayurvedic* drugs can be harmful for our body when not administered in proper dosage as per mentioned in classic literatures.

Key words: *Anupana*, Catalysts, Dose, Mercury, *Rasaushadhis*, *Snehapana*.

INTRODUCTION

Rasaushadhi have a very important place in treatment of ailments. *Rasa* in literal meaning is "Mercury". By special process of purification of mercury, the toxicity of the mercury is upto that extent minimized, where mercury becomes edible and converts its inherent property for healing of the human body ailments.^[1] There are many methods described in texts, mainly *Parad* (Hg) and *Gandhak* (S) are used to make this preparation, but there are some

other ingredients too and the duration of action is hence different. The metallurgy in India got attention after 4th century through the work of *Ayurvedacharyas* like Vagbhata. In Ayurveda crude mercury is never used for medicine purpose. e.g. Mercury is used in the preparation of *Rasasindura* but its properties are altered by *Kupipakva Rasayana* preparatory methods. Before this *Rasa Acharyas* have made such preparation in *Andha Musha* made of clay with the help of *Tushagni*.^[2] Finally in 14th century this metallurgy got its full bloom by the effort of Ayurveda *Acharyas* like Nagarjuna.

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Various Dosage forms in *Rasashastra*

The drug dosage forms in the domain of *Rasashastra* are,

- *Bhasmas* (calcined/incinerated forms of metals and minerals)
- *Parpati* ^[3] (crispy thin wafers)
- *Pushpa* / *Karpoora* (non-sulphuric mercurial forms)

- *Pottalis* (*Kupipakwa Rasayan* as *Sindooras* (Sulphide/oxide forms of Hg),
- *Rasas* (powder/*vati/guti* forms)
- *Manduras* (Iron preparations)
- *Pisti* (microfine calcium mixtures) in the form of powders or *Gutis*,

Action of Rasaushadhis

Ayurvedic drugs works on the body preferably by performing action on *Jatheragni*. Absorption of *Rasa Aushadhis* starts in the oral mucosa with the vehicle of Honey (one of the best known *Anupana* of *Rasa Aushadhis*) which is a monosaccharide. The mode of administration of drug varies according to its effect on *Jatheragni*. e.g.

- *Mayurachandrikabhasma* is given on empty stomach.
- Metallic preparations (*Loha*) given with *Ghritha* is better for long action.
- *Parpati* is given before food – *Pragbhaktam* or *Antarabhaktam*.

Dosage and Anupana of few Kupipakwa Rasayana

Kupipakwa Rasayan are potent and fast in action. In *Kupipakwa Rasayana* procedures – the medicine collection is from the “*Talastha*” or “*Kanthastha*” and “*Ubhayastha*”. Only the method of collection makes the difference in the property of medicine. Mere change in the *Anupana* of a drug changes the *Rogaadhikara* (target disease) of a drug. This can be understood by an example of *Jayavati*.^[4]

Jayavati - Dose 2 Ratti (250mg/day)

Anupana

- Fever in *Raktpitta Anupana*- *Raktchandankashaya*
- *Ardhavybedak Anupana* - *Kharentimula Kashaya*.
- *Sangrahni* with fever *Anupana* - *Motha + Indrajau + Shunti Kashaya*.
- *Pittaja Jwara Anupana* - *Kashaya of Pittapapda*.

Some examples of the Kupipakwa effective in the management of infectious diseases

- *Talsindoor* - Dose: 1-2 *ratti* (125-250 mg/day) *Anupana*: *Ardraksvaras, Madhu* or *Ghritha*.
- *Rasa sindoor* ^[4] - Dose: 1-2 *Ratti*. (125-250 mg/day) *Anupana*: *Madhu*.
- *Panchamrita Rasa* - Dose 1 *Ratti* (125mg) *Anupana*: *Punarnavakashaya* or *Aadrakswarasa*
- *Kaphaketu Rasa* - Dose: ½ -1 *Ratti* (62 – 125 mg/day) *Anupana*: *Ardraksvaras, Madhu*
- *Manikya Rasa* - Dose: 1-2 *Ratti* (125-250 mg/day) *Anupana*: *Madhu*
- *Amrita Rasayana* - Dose: 2 *Ratti* (250mg/day) *Anupana* : *Ghritha, Mishari, Madhu*

Rasashastra preparations are more advantageous

They work in smaller doses and are faster in action. If taken with honey, *Rasa* preparations get absorbed quickly into the body’s deepest tissues. They act as a metabolic catalyst thus carrying the potency of the herbs they contain directly to the cellular level. The efficacy of some *Rasa* preparations increases over time and hence some *Rasa* preparations have no expiry date.

- The availability and preservation of *Rasa* medicines is much easier than herbal preparations.
- The taste of *Rasa* medicine is generally neutral.
- *Rasaushadhis* are easy to administer.

General principles of dose and Anupana mentioned by Acharyas

The medicine should be taken in the morning if the time is not mentioned. Water should be used as *Bhavana Dravya* in case no *Bhavana Dravya* is mentioned. Earthen pot must be used in case vessel for the preparation of medicine is not mentioned. Root of a plant is to be used when specific plant part to be used is not mentioned. All the drugs of a medicine should be taken in equal quantity when the quantity of individual drug is not mentioned. In any preparation, if the drug is mentioned twice it means

the quantity should be double. The wet drug must be taken in double quantity to the dry form. Substitute drug should not be selected for the main drug. Drugs other than main drug in a preparation can be substituted. One can increase or decrease the dose of a preparation as per requirement because all the preparations in classic literatures are mentioned keeping in view middle aged person, with moderate digestive power and moderate body strength.

Fundamental principles of processing in drug design (Gunantaradhana)

Acharya Charak in *Vimana Sthana*, 1st Chapter has described the importance of *Samskaras* in *Aahara* and *Aushadhis*.^[5]

- 1. Water:** In *Ruksha Dravyas* water addition leads to *Mriduguna*.
- 2. Agni Sannikarsha:** Rice are heavy but its treatment with water and cooking with heat makes it light.
- 3. Shaucha:** After the *Shodhana* of *Vishas*, the poison property is washed out and it can act like a medicine.
- 4. Manthana:** Curd is known to produce *Shotha*. But when the same curd's fatty part is taken out it becomes light and acts as a *Shothahara Dravya*.
- 5. Desha:** According to *Desha* (place of origin) the property of the drugs of plant, animal or mineral origin differs.
- 6. Kala:** Few *Bhasmas* and *Asava / Arishta* when kept for a specific time period leads to the enhancement of its property.
- 7. Vaasana:** The taste or flavor of *Aahara / Aushadhis* changes with time period.
- 8. Bhavana:** If in *Amalaki Rasayana*, *Amlaki Churna* is given *Bhavana* of *Amlaka Rasa*, its *Rasayana Guna* increases significantly. In the same way if *Kuchla* is given *Bhavana* of *Gomutra* its poison property disappears.
- 9. Kalaprakarsha:** *Aasava*, *Arishta*, *Dhatu*, *Rasa* respectively gets enhancement in its *Gunas* with

the passage of time. It means they are more potent with the passage of time.

- 10. Bhajana:** The *Ghrita* which is kept in *Kaansa* or *Tamra* vessel becomes as harmful as poison but contrary to it if water is kept in *Tamra* container, the *Guna* of water increases manifold.

This means we cannot alter the nature of a drug, but by certain processes mentioned above we can change the *Swabhavika Gunas* of *Aushadha / Ahara*.

Achievement of Rasibhavana

The ancient scholars have also mentioned that *Mritalohas* (metallo-mineral formulas) should be converted to *Rasibhavana*^[7] state means it should be changed in absorbable form i.e. organo metallic compound form as in that form only the absorption is possible. The *Rasaparivartana* or the absorption, metabolism, distribution and the excretion of a drug happens by 6-7 days for its complete action. But some of the drugs are an exception to the above statement as they show the action according to their attributes.

Other drug dosage forms

These dosage forms are mentioned in *Bhaishajya Kalpana Vigyan* where the drug is prepared with *Kaashta Aushadhis*.

- *Ghanasatwa* (solid extract), *Guda* and *Khanda Kalpana* (Sugar based solid preparations), *Avaleha* (linctus), *Vati* (solid dosage forms).
- *Swarasa* (juice extract), *Kalka* (pastes), *Kashaya* (decoctions), *Hima* (cold infusion), *Churna* (powders), *Phanta* (hot infusion), *Ksheerapaka* (medicated milk), *Arka* (liquid distillate).
- *Guti* (small sized solid dosage form), *Modaka* (bolus kind of dosage), *Pindi* (pea sized solid dosage), *Varti* (suppositories), *Anjana* (microfine paste for eyes),
- *Lavana* (salt form), *Masi* (carbon form of a drug), *Ayaskriti* (metallo-mineral liquid dosage), *Satva* (starchy extract), *Kshara* (alkaline powder).
- *Upanaha* (poultices), *Dhupana* (fumigative powders), *Dravaka* (acidic/alkaline distillates),

Ghrutha (medicated ghee), *Taila* (medicated oil), *Asava* and *Arishta* (fermented liquids), *Lepa* (creams), *Malahara* (ointments) etc. are mentioned.

Principle behind Ancient drug design and dosage forms

If we take an insight into the classic medicines, the following concept of drug and dosage preparation comes into knowledge (which are scientifically validated today)

Stability was observed for the shelf life of all the drugs. Nature of the drug to be selected concerned with the part used, time of collection, method of collection etc. Disintegration and dissolution using the adjuvant drugs as *Anupana* or *Snehapana*. Time duration of action was learned and doses were arranged accordingly. Easy ADME (absorption, distribution, metabolism, excretion) where drugs with its action from its *Rasa* (taste) to the *Karma* (action) are recorded. Bioavailability for the drugs which had to have a sustained / immediate release. Biotransformation or the *Rasibhavana* state where the drug enters into the target cell organelles. Drug affinity towards one another when given in a formulation. Palatability as it should be acceptable to all the ages and vulnerable. *Prabhava* was the reason cited for the mysterious action.

A Modern Insight

Makardhwaja is an *Ayurvedic* formulation which is prepared using Mercury, Gold etc. According to modern scientists mercury was believed to be toxic for kidneys. But when studies were conducted on it, the drug was found not to be nephrotoxic but in fact protective to the kidneys from nephrotoxins. In the same way iron can be administered in its oxidized form with the presence of Vit. C or Folic acid. *Dhatrilauha*, the finely powdered rust iron (oxidized Fe) is mixed with *Aamla* which is a rich source of vitamin C. Thus it can be said that oxidised iron can be administered safely with presence of Vitamin C. Synergism and Antagonism in a formulation to enhance the drug activity and at the same time inhibit

the toxic property of the drug. Eg: *Tankana* (borax) in *Vatsanabha* (*Aconitumferox*) formulations. *Rasa Aushadhi* prepared by different *Shodhan* procedure can also be termed as semisynthetic preparations.

CONCLUSION

In Ayurveda diseases can be managed effectively with *Rasa Aushadhis* which due to their small size are quicker in action. Though the *Ayurvedic* drugs have a minimum side effect than the other systems, it can also be harmful for our body when not administered in proper condition and in measure as per requirement. Appropriate selection of *Anupana* and *Sahapana* (as per classic literature) enhances the efficacy of these *Rasa Aushadhis*. According to *disease, Prakruti, Bala, Vaya* (age) and selection of proper drug one can fight almost every infectious disease using *Rasa Aushadhis*. There is no strict demarcation between a medicine and poison. It depends on the means and methods of administration.

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