

**A REVIEW ON STRATEGICALLY DESIGNED DRUG DELIVERY SYSTEM W.S.R. TO RASA FORMULATIONS****Dr. Rahul Sharma<sup>\*1</sup>, Dr. Anil Nagle<sup>2</sup> and Dr. Raj Kishore Pati<sup>3</sup>**<sup>1</sup>Assistant Professor, Department of *Rasa Shastra & Bhaishajya Kalpana*, SAM College of Ayurvedic Sciences and Hospital, Raisen, India.<sup>2</sup>Professor & HOD, Department of *Rasa Shashtra & Bhaishajya Kalpana*, Pt Khushilal Sharma Government Ayurveda College & Institute, Bhopal (M.P.), India.<sup>3</sup>Professor Department of *Rasa Shashtra & Bhaishajya Kalpana*, Pt Khushilal Sharma Government Ayurveda College & Institute, Bhopal (M.P.), India.**\*Corresponding Author: Dr. Rahul Sharma**Assistant Professor, Department of *Rasa Shastra & Bhaishajya Kalpana*, SAM College of Ayurvedic Sciences and Hospital, Raisen, India.

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**ABSTRACT**

Ayurveda is glory of Indian medical system believe in disease management through scientific and spiritual approaches. In this was ayurveda suggested uses of many formulations which were prepared on the basis of logical approaches. The rationality to design different ayurveda formulations based on the specific needs of patients. Churna, Vati, Kwatha, Arishta, Kalka, Asava and Avaleha, etc. are different formulations used for specific pharmacokinetic and pharmacodynamic purposes. Ayurveda formulations designed for oral, nasal and topical applications, etc. Ayurveda also described role of different formulations for the particular age groups means liquids or semisolid drugs for pediatric and geriatric patients. Similarly the therapeutic science of mercury Rasashastra which also deals with other mineral/mental based formulations elaborated uses of different formulations such as; Bhasmas, Parpati and Pottalis, etc. These formulations prepared for particular benefits and prepared from scientific approaches so that therapeutic potency get enhanced and toxicity reduces. Taking importance of ayurveda formulations and their rationality of utilization this article emphasizes strategic aspects of Ayurveda formulations W.S.R. to Rasashastra.

**KEYWORDS:** Ayurveda, Formulation, Rasashastra, Bhasmas, Parpati and Pottalis.**INTRODUCTION**

The management of health of whole mankind is prime duty of all types of medical system and Ayurveda as oldest system of health cure also put great efforts towards the health restorations of human being. Ayurveda utilizes many drugs in different forms for therapeutic purposes and various drug formulations are presented by ancient Ayurveda philosopher and these formulations also updated time by time. The formulations based on natural sources like; animals, plants, minerals and marine based formulations provide many therapeutic benefits in diversified health issues. However it is also fact that the potency or efficacy of any drug formulations not only depends upon main ingredients but also depends upon the type of formulation designed for specific drug delivery purposes. The optimization of drug delivery system provides maximum therapeutic benefits of formulations.

The ayurveda formulations of different category designed for particular drug delivery system mentioned below:

- ✚ *Ark* is liquid formulation; it is distillation of herbs which get assimilated easily.
- ✚ *Asava & Arishta* are fermented medicines, these drugs prepared by fermenting herbal juices or decoctions with sugar.
- ✚ *Kwath* is decoctions; it is prepared when herbs boiled in water for particular time period.
- ✚ *Avaleh* is paste like products used as semisolid dosage form.
- ✚ *Pak* is paste like preparation thicker than *Avaleh*.
- ✚ *Bhasma* is micronized ayurveda powders prepared through the process of purification and sizes reduction.
- ✚ *Churna* is powder of dried herbs. Drying herbs are grinded to prepare *Churna*
- ✚ *Vati* is compressed form of powder used as small, round and spherical shape tablets & pills.

✚ *Taila* is medicated oils used topically, however some preparation used for nasal as well as oral administration.

The strategy of designing above mentioned formulations involves following key aspects:

- ❖ To enhance patient and physician compliances.
- ❖ To enhances choices of drug selection for specific age groups like; elderly and children.
- ❖ To improves drug palatability.
- ❖ To restore stability and delay process of degradation.
- ❖ To improve other qualities like; appearance and ease of administration.
- ❖ To convert biologically non-compatible formulation into compatible one.
- ❖ To reduces toxicity and maximizes therapeutic window.
- ❖ To optimizes process of manufacturing, storage and transportation.

The Ayurvedic Formulary of India mentioned many classical formulations for various health purposes and formulations based on mercury and other mineral/metal based formulations specifically dealt under the heading of *Rasashastra*. *Rasashastra* deals with processing, storage and therapeutic uses of *Rasa dravyaas*. *Rasa Shastra* utilizes various formulations for health benefits prepared from *Rasa* (mercury) along with other metals and minerals compounds like; *Swarna*, *Rajat*, *Tamra*, *Abhrak* and *Makshika*, etc. The various formulations prepared under the concept of *Rasashastra* involve strategy to optimize therapeutic profile and reduces toxicity of metal/mineral compounds so that biologically non-compatible drugs get converted into compatible form.

#### Strategies of Pre-formulation Optimization in *Rasashastra*

##### ❖ *Satvapatana*

To extract out essence of metal and mineral origin drugs by heating with alkaline and acidic materials in furnace, this process liberates *Sara* and *Satva* of herbo-metallic preparation.

##### ❖ *Amritikarana*

There are some poisonous metals which not get purified easily through *Shodhana* and *Marana* process for such compounds *Amritikarana* utilized which involves processing of toxic materials with other drug materials till to get free from toxicity. It is considered as precautionary measure which make compound almost free from toxic effects.

##### ❖ *Bhavana*

Powdered substance triturated with *Swarasa* of desired material in *Khalva* till to drying up. It helps to disintegrate the material and to enhance properties of material.

##### ❖ *Marana*

*Marana* means incineration, involves process of ashes formation. The purpose of this process is to reduce size of metals & mineral by cooking them into cow dung cakes fire. This process converts metal into non toxic and easily digestible forms.

#### Some unique drug delivery systems of *Rasashastra*

*Bhasmas* are prepared as incinerate forms of metals/minerals with a purpose to converts toxic metal into therapeutic compound with reduction in size so that maximum bioavailability can be achieved. These formulations offers therapeutic values in rejuvenating therapy, imparts vitality, resist aging, combat against sexual disorders, treat skin diseases and boost strength. *Swetapradara* & *Prameha* can also be treated effectively with the help of *Bhasmas*.

*Parpati* is like thin wafers it is prepared using *Parada* and *Sulphur*, these ingredients grounds till to get *Kajjalabhasa* which should possess *Slakshnata*, *Anjana sadrusa sukshma*, *Jala pareeksha* and *Agnipariksha* properties. Other drugs added gradually by triturating in *Khalwa* so to get homogeneous mixture. The *Parpati* preparations need special strategy to prepare desired *Parpati Pakas*; *Mrudu*, *Madhyama* and *Khara paka*. *Mrudu* & *Madhyama paka* preparations mainly used for therapeutic purposes. *Parpati* used for many therapeutic benefits including for alleviating *Grahani* & *Arsa*, useful in *Kshaya*, *Pandu* & *Kamala*, helps to relieve *Kushta*, *Amavata*, *Daha* and *Jwara*. The drug delivery through *Parpati* implies two strategies; *Samanya prayoga* and *Vardamana prayoga*. *Samanya Prayoga* involves dosing of 1-2 *Ratti* along with fried Jeerak and Hingu. This strategy used when diet restrictions not considered while in case of *Vardamana prayoga* the recommended dose is 8 *Gunja* per day. The advantage of *Parpati* is that it eliminates adherent impurities of metal and enhanced drug efficacy.

Similarly *Pottalis* is important formulation of *Rasa* category which provides benefits like; comprehensive in size and shape, easy to preserve, minimal dosing and stability. Various methods suggested to preparing *Pottali* like; *Putra* method, *Kaparda* method and *Gandhaka Purana* method. The amalgam of mercury and sulphur treated with different plant materials to achieve compact size and shape with the help of natural binder. This formulation offers good health effects in skin diseases, metabolic disorders, minimal dosing helps to manage acute emergency conditions, pacifies *Doshas*, potentiates *Dhatu*s and regularizes circulatory functions.

#### Examples of Novel Drug Delivery System for herbal medicines

- ✚ Liposome for prolong action
- ✚ Nanoparticle for bioavailability enhancement
- ✚ Phytosomes for solubility enhancement
- ✚ Microsphere for site specific delivery
- ✚ Ethosomes for increasing skin permeation

- ✚ Emulsion for improving absorption
- ✚ Niosome for prolonged release
- ✚ Transdermal patch for patient compliance and reducing dose dumping

## CONCLUSION

Rationality of pharmaceutical preparation play vital role towards the effective management of diseases and Ayurveda also described many ways to achieving particular goals related to the pre-formulation and formulation process. In *Rasashastra Bhavana*, *Manara*, *Shodhana* and *Samskara* are some strategies of pre-formulation optimization *Bhavana* loosens cohesiveness of molecular thus helps to break metal into finer particles, *Marana* process make drug non-toxic, easily digestible, absorbable and assimilable. *Shodhana* means process of indigenous purification while *Samskara* is multifold purification process used for mercury to make it compatible with others, etc. The specific processes of ayurveda convert drug into non-toxic, absorbable and biologically consumable forms.

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