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BASIC PRINCI PLES OF RASA SHASTRA -PHARMACEUTICS OF HERBO-MINERAL FORMULATIONS

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ABSTRACT

Ayurveda is the science which increases both the quality and quantity of human life. In the present day scenario, the life style of the people has created so many issues. So to overcome them, Ayurveda has played an important role. The main aim of Ayurveda is to maintain the health of healthy person and cure the diseased one. Ancient Pharmaceutical deals with herbal, minerals, metals and animal products, which are primary source of medicinal production. Rasa shastra and Bhaishajya Kalpana is one of the branch of Ayurveda which mainly deals with herbo -mineral formulation, So it is considered as Indian Pharmaceutics. The ancient treatments for the preparation of medicine include, Shodhan, marana, Jarana, murchana, amritikarana and satvapatana etc. In Ayurvedic therapeutics, drug is given importance. The drug formulations are known as Bhaishjaya Kalpana. The Ayurvedic drug formulation is based on "Panchavidha Kashaya". In Ayurveda 'drug'(aushadha) is considered as an important tool in the management of patients.

INTRODUCTION

Rasa shastra formed about 7th century A.D as a branch of Ayurveda. The middle ages claimed to be the golden age of Rasa shastra, the explanation of raw material, manufacturing process and its therapeutic effects, and final product formation are found in various literature of this era.

It is clear that every science has its own basic principles. Available literature of Rasashastra has few fundamental concepts which are associated with foundation and development of this pharmaco-therapeutical science. The description of these concepts is not very clear and

scattered in various ancient classical texts. It is need of hour to make a review of these fundamental principles in systemic and explanatory way. Therefore in present work an attempt has been made to make a comprehensive review of basic principles of Rasashastra and to illuminate their distinguishing features. Available classical texts have been studied basic principles has been collected from texts of *Rasashastra* such as *Rasendramangala* (8th century AD) *Rasendracuḍamani* (12th century AD), *Anandakanda* (12th century AD), *Rasaratnasamuchchaya* (13th century AD), *Rasendrachintamani* (13th century AD), *Rasendrasarasamgraha* (14th century AD), *Rasakamadhenu* (17th century AD) and *Rasatarangini* (20th century AD) etc. These basic principles have been interpreted according to their rationality, importance and application in view of current scenario. The review of classical texts of Rasashastra showed that following concepts are the basic principles of Rasashastra.

1) Concept of Lohavada and Dehavada

Conversion of low precise metals into precious metals such as gold by using specifically processed mercury is known as Lohavada. Consumption of such potent mercury for gaining healthy and long life is termed as Dehavada. Rasashastra was originated based on this concept of attaining healthy long life by means of treated mercury which can convert lower metals into gold. According to ancient classical texts both Dehavada and Lohavada were in existence till 13th century AD, but this science was too secrete and known to very few people. Today, many references are available related with conversion of copper and lead into silver and gold but the exact knowledge to achieve successes is lost in the chronology.[1]

2) Concept of Parada Ashtadasha Sanskara

There are 18 processing methods of mercury which aimed to remove imperfections of mercury and to make mercury such powerful that it can be used to achieve the purpose of Dehavada and Lohavada. Among the 18 processing methods, first five are narrated for removing flaw from mercury; next three are mentioned for increasing power of mercury; next 8 methods are related with initiating transformation power in mercury to convert any metal into gold; the 17th processing method is testing of transformation power of mercury and the last one is the administration of mercury in human beings.[2]

3) Concept of Paribhasha Prakarna

A statement of exact meaning of a word or phrase etc is known as Paribhasha (technical term)[3] There are 78 different terms mentioned in Rasaratnasamuchaya.[4] The words which

are enigmatic and ambiguous are better understood with the help of Paribhasha. The study of Paribhasha gives rise to better comprehension about the science Rasashastra.

4) Concept of Yantra, Musha, Koshti and Puta(Instruments for incineration of metals and minerals)

Ancient seers of Rasashastra have invented various instruments, crucibles, blowers and pit for incineration of metals/minerals. Acharya Somadev, author of Rasaratnasamuchchaya[5] have narrated 31 instruments, 17 types of crucible, 4 types of blower and 10 types of pit in 9th and 10th chapter of his treatise. This concept provides guideline for requirement of various apparatus in pharmacy for processing of mercury, metals, minerals and herbal drugs. Apparatus is one of basic requirement for medicine preparation and hence to understand Rasashastra and for research and development in Rasashastra, knowledge of all these apparatus is necessary.

5) Concept of Shodhan (purification)

In Rasashastra generally the metals/minerals and sometime few drugs of poisonous nature are found used which are likely to contain some toxic effect also. Hence with a view to remove or minimize their toxicity and to make them suitable for further process a number of purification procedures have been found evolved which is known as Shodhana.[6] Here it should be noted that Ayurvedic purification does not mean making metal 100% in its original elemental form, in fact this procedure is related with impregnation of organic molecules in inorganic substances and increasing their bio- accessibility as well as reducing unwanted effects. The metallic preparations are used in the form of Bhasma (incinerated powder) Shodhan is first and most important step before preparing their Bhasma. Shodhan of metals is divided in two steps viz; Samanya Shodhan (general purification) and Vishesha Shodhan (special purification). Samanya Shodhan is mostly performed by heating the metal up to red hot stage or up to complete melting then quenching for either three or seven times in each liquid media viz Tila Taila (sesame oil), Takra (clarified butter), Gomutra (cow urine), Kanji (sour gruel) and Kullatha kwatha (decoction of Dolichos biflorus Linn) respectively.[7] However Samanya Shodhana is preferred only for metals and not for minerals and poisonous herbs. Vishesha Shodhana involves similar procedure of heating or quenching but the liquid media is different for different metals.

6) Concept of Marana(incineration)

The metals and minerals are not bio- assimilable in their natural forms. They needed to be

converted into such fine form which can be easily assimilable in human body, able to cure various illnesses and does not cause any harmful effect. To achieve this purpose, concept of Marana (incineration) was discovered by ancient seers of Rasashastra. The process of making the metals/minerals into a fine powder by applying required quantum of heat is known as Marana.[8] In brief, Marana means conversion of metal/mineral into fine nano particles which herbo-mineral, organo-metallic nature and therapeutic potency. In classical texts various methods incineration are mentioned for every metal. These methods can be divided into some categories based on the principle procedure such as incinerated metal prepared after Jarana (open pan frying) process, prepared from Pishti (amalgam), prepared by Lepa (application of layer over metal) method and prepared after open pan frying process followed by Bhavana (levigation) and Puta (incineration cycles) etc. Many time ancient seers of Rasashastra utilized more than one principle procedures. Detail understanding of incinerated preparation of any metal by a principle process helps to understand preparative procedure of other metals.

7) Concept of Amritikaran (wipe out the harmful products from the incinerated metals or minerals)

Amritikaran is an important procedure found described in the context of Marana process. It is done to remove the remaining bad effects of incinerated metal/mineral which are likely to remain even after Marana process.[9] It is not essentially required for all the incinerated metals/minerals but indicated for Mica, copper and copper containing preparations to make them suitable for therapeutic use.

8) Concept of Bhasam Pariksha(test of Bhasmas)

It is well understood from classical literature that the ancient scholars of Rasashastra were well aware of improperly processed and incompletely prepared incinerated preparations. Therefore they have advised to take various tests to confirm complete formation of product. These tests are known as Bhasma Pariksha. Few important tests have been discussed here. A specific colour is mentioned for each Bhasma. Alteration in specific colour suggests that Bhasma is not prepared properly because a particular metallic compound is formed during Bhasma preparation and every chemical compound possesses specific colour. Bhasma must be Nischandra (lusterless), After proper incineration, luster of metal should not remain if luster is still present, it indicates further incineration.[10] Varitara test, applied to study lightness and fineness of Bhasma, is floating character of Bhasma on stagnant water surface.[11] This test is based on law of surface tension. Unama Test is further assessment of

Varitara test. A grain of rice is to be kept carefully on the layer of floated Bhasma. Observe whether grain floats or sinks. If grain remains as it is on layer, then Bhasma can be considered as excellent(properly prepared). Rekhapurnata test means Bhasma should be so fine that it can fill furrows of finger tips. A little amount of Bhasma is rubbed in between index finger and thumb to observe whether particles can fill furrows of finger tips. This test is applied to study fineness of Bhasma. Bhasma particles should be of minimum size for easy absorption and assimilation in the body.[12] Apunarbhava means incapability to regain original metallic form. For this test, Bhasma is mixed with equal quantity of Mitra Panchaka (seeds of Abrus precatorius, honey, ghee, borax and jaggery) and it is sealed in Sarava Samputa (earthen pots), thereafter, similar grade of heat used for preparation of particular Bhasma is applied and on self cooling product is observed.[13] Lustrous particles in it show presence of free metal, which is indicative of improper incineration. Niruttha is to test inability to regain metallic form of metal after converting into Bhasmas. In this test, Bhasma is mixed with a fixed weight of silver leaf, kept in earthen pots and similar grade of heat is applied and after self cooling, weight of silver is taken. Increase in weight of silver leaf indicates improperly prepared Bhasma.[14]

9) Concept of Bhavana (levigation)

Bhavana is a process in which the material is completely submerged with the liquid media like swaras, kwath and triturated till complete absorption of liquid into the powder.[15] Bhavana is an important procedure in marana of metals. It is well understood that to facilitate bhavana, metal should be either in amalgam form or in powder form, therefore jarana procedure is advised in marana method of metals which utilize herbal media for bhavana. Bhavana process can be carried out by adopting these 2 methods.[16] Levigation method in which material is mixed with liquid media and ground till the whole material becomes like dough.[17] The material is mixed with particular liquid media and ground continuously for the specific period. Soaking method in which the duration of whole process is not mentioned the liquid media is to be added to the material and whole recipe should be left under sunrays during day time. Quantity of bahavana dravya should be taken either as much as that the powder drug becomes completely wet, the material can get completely immersed. Swaras / kwath of any dravya used for bhavana shoud be equal in properties and potency of bhavya dravya.

10) Concept of Jarana

The process of digestion of metals, using different instruments, of gandhaka, abrak, makshika etc. by the mercury, with no change in weight of mercury is called jarana.[17] Jarana is a medium of busmikaran. In case of putiloha like Vanga, Jarana is done with Apamarga kshar. It is done after shodhan process by heating the metals with kshar and rubbing it continuously. This procedure is important for medicinal purpose.

DISCUSSION

It is a well known fact that every science has gone through changes and modifications done by researchers in related field. Advancement in technologies, new researches according to contemporary needs can be considered as basis of changes and modifications in any branch of science. Rasashastra is not an exception to this reality. Achieving salvation was the main aim of ancient Indians and maintaining health, longevity of life for continuous meditation was the key requirement. Therefore prime importance was given to concept of Lohavada and Dehavada from 8^{th} to 13^{th} century AD. It is believable that few seers achieved success in conversion of copper and lead into gold by using processed mercury. However the science of mercury processing was kept highly secret and rarely passed to next generation which resulted in complete vanishing of such miraculous knowledge. Great facility and financial support is needed for research in the field of Lohavada and Dehavada. Similar situation is applicable to 18 processing methods of mercury. Today these methods are considered as tedious, time consuming and expensive. First eight processing methods are possible to perform and are used upto some extent. Therefore the knowledge of atleast first eight processing methods is essential for understanding of Rasashastra.

Using a specific term for a particular process, for a group or for defining a special concept is one of the best way to make a science precise as well as systematic. The Paribhasha i.e. terminology utilized in Rasashastra are very well explained by Acharya Vagbhat in 8^{th} chapter of his treatise Rasaratnasamuchchaya. The classical description of instruments, crucibles, blowers and pit for incineration of metals/minerals is with the view of ancient knowledge availability of materials. Much advancement have been done in this field in recent time and this have included in Ayurvedic drug manufacturing such as use of distillation apparatus in place of Tiryagapatana Yantra, cast iron crucible at place of Vajramusha, electric muffle furnace and use of liquid petroleum gas replaced Koshthi and Puta etc. Such modifications are acceptable and need of hour for large scale manufacturing, minimizing

labor cost, time and for large scale manufacturing of medicines. It is interesting to mention that few concept of Rasashastra such as concept of purification, concept of incineration, concept of Amritikarana, concept of test for incinerated materials and concept of Bhavana (levigation) holds their unique value and need to be strictly followed as per classical guideline to achieve desired results mentioned in Ayurvedic texts. The available literature of Rasashastra is source of vast information for discovering new formulations as there are many methods narrated for purification, incineration, levigation etc and change in single drug/media in any of these processes may alter the therapeutic potential of final product. Although, it is clear that the knowledge of basic principles of Rasashastra is essential for understanding, research and development of this pharmaco-therapeutic science. In present work the scattered basic principles have been reviewed in brief and this information will prove obliging for general understanding of Rasashastra.

CONCLUSION

There are eight basic principles of Rasashastra which includes Lohavada and Dehavada; eighteen processing methods of mercury, terminology in Rasashastra, instruments, crucibles, blowers and pit for incineration of metals/minerals, purification, incineration, Amritikarana, test for incinerated materials and levigation. Keen understanding of these concepts with view of both Ayurvedic and contemporary science is the key to understand as well as for research and development in Rasashastra.

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