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Acceptance of Ayurveda in the World with special reference to *Bhasma*

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Abstract

The 21st century has marked the evolution of new era with advent of attitudes and thoughts in healthcare system. While bringing traditional medicine of India into limelight, *Ayurveda* has always been criticized because of its ambiguity and philosophical tenets incomprehensible to occidental mind. *Rasashastra* is one branch of Ayurveda, which deals with herbo-mineral/metals/non-metals preparations called *Bhasmas*. They are claimed to be biologically produced nanoparticles. Our *acharyas* had the vast knowledge of these *bhasmas* because of which it was popularly practiced by them in various conditions. Inspite of this importance we are not able to globalize *bhasmas.* So now it is the time to wake up and work hard to uplift status of *bhasma* which results in better status of *Ayurveda* in and around country. Once we analyse problems it is our responsibility to find solutions for the same. Here comes the role of standardization, which is needed for raw material, process and finished product. It was explained by our *acharyas* with *Ayurvedic* parameters which is not sufficient in present day scenario & it is a matter of discussion. Using modern techniques effectively without compromising in our classical formulae is the need of the hour. When the bhasma passes through all these steps it will be definitely of best quality which certainly results in its better status in and around country leading to acceptance of Ayurveda in the world.

Keywords

Bhasma,Rasashastra,Standardization,Globalize

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INTRODUCTION

The 21st century has marked the evolution of new era with advent of attitudes and thoughts in healthcare system. While bringing traditional medicine of India into limelight, *Ayurveda* has always been criticized because of its ambiguity and philosophical tenets incomprehensible to occidental mind. This led to the disinterest by people outside India towards acceptance of *Ayurveda* and even they are deprived of benefits of traditional health system to maintain healthy life.

Contrary to the global scene, *Ayurvedic* schools in India consistently urge for scientific rooting of *Ayurvedic* principles. *Ayurveda* is science of life with motto of maintaining health of healthy person and curing the disease of a *rogi*. *Rasashastra* is one branch of Ayurveda, which deals with herbo-mineral/metals/non-metals preparations called *Bhasmas*. They are claimed to be biologically produced nanoparticles[1], which are prescribed with several other medicines of Ayurveda. The smaller particle size is responsible for quick action and instantaneous result. This is the reason for comparing *bhasmas* into nanoparticles. *Bhasma* means an ash of a drug obtained through incineration, where it has to undergo so many intermediate steps to reach the form of *bhasma.* They include *shodhana, marana, amritikarana, lohitikarana*etc, by the help of which a metal or mineral will be converted into non-toxic product. Then the product will be acting as *amritha*, a form suitable for internal administration.

PRESENT SCENARIO

Our *acharyas* had the vast knowledge of these *bhasmas* because of which it was popularly practiced by them in various conditions. Inspite of this importance we are not able to globalize *bhasmas. Rasaushadhis* especially *bhasmas* are not allowed to be administered internally in foreign countries. There is strong restriction for its practice. *Bhasmas* or its preparations are considered as toxic by the people of contemporary medicine. There are so many researches going on just to prove that *rasaushadhis* are toxic and they should be banned from the society, because of which people hesitate to use these medicines or even to consult *Ayurvedic* practitioners. When this is the situation in India then how it will be possible to spread awareness regarding *bhasmas*across Globe?

PROBLEMS

So now it is the time to wake up and work hard to uplift status of *bhasma* which results in better status of *Ayurveda* in and around country. First of all we need to identify the problems which cause hindrance for the globalization of *Bhasma*, they are:-

1) In the olden days *bhasmas* were prepared promptly, but now a days most of *bhasmas* are prepared using shortcut methods. As the reference says in *Rasa RatanaSamucchya*, *bhasma* obtained by treating *dravya* (especialyloha) with *rasa/parada* for *marana* is *shreshta,* by treating with *mulikaadi* (herbal drugs) it is *madhyama,* attains *kanishtaguna* when treated with *gandhaka,* and *durguna* when treated with *arilohas*[2]. But these days, if large scale preparation of *Bhasma* is required, nobody has enough patience and time, because of which they go for *bhasma* preparation using *ariloha or gandhka.* Here it will be prepared soon but product will not be of superior quality.

2) Identification and authenticity of mineral and metals is not done properly. There is *grahyalakshanas* given for each and every mineral. It was strictly followed in the past but now a days either due to unavailability of raw drugs and improper/insufficient knowledge regarding each *dravya* among *Ayurveda* faculty, leads to selection of *agrahyadravya.* Ultimately though proper procedure is adopted for preparation it results in substandard *bhasma.*

3) Improperly done procedures like *shodhana and marana, amritikarana* etc. *Shodhana* is must for every drug to remove both physical and chemical impurity and to increase its potency, by which its particle size will be reduced. Eg. *Swarnamakshikanirvapa*in *nimbuswarasa* for 21times[3]. If *shodhana* is not properly done then its doshas will remain as it is because of which it produces *ashudhabhasmavikaras*in the body which is explained in classics by our *acharyas*. Eg: *AshudhaTuthasevana* results in *vamana and bhrama*[4] . Marana is nothing but *bhasmeekarana* where drug is converted into *bhasma* form. So we can find reduction in particle size. There will be specific number of putas told for each metal or mineral. After completion of *putabhasmaparikshas* to be done to know whether *putas*given sufficient or not. If the process is completed then it will act as*amritha* otherwise improperly formed *bhasma* will kill a person like *visha*. Now a days this situation is seen because *bhasmas* contain elements in its raw form producing harmful effects.

Amritikarana is special procedure done in case of drugs like *loha and tamra*, because even after *marana* they will contain some *vaishitadoshas*, which is necessary to be removed. It makes drug as good as nector by reducing its *tikshnata*. If this procedure not done properly then it will again lead into complication, Eg: *astadoshas of Tamra*[5].

4) Inefficiency to conduct *bhasmapareeksha:* These are the parameters to assess the quality of *bhasma* and for its standardization. When *Ayurvedicvaidya* is efficient in conducting this, he will conclude whether given *puta* is sufficient or not. While the one with improper or inefficient knowledge may end up with confusion and he may terminate number of *putas*, as a result there will be substandard *bhasma*. Knowledge of exception is necessary among vaidyaseg:*sudhavargeeyadravyas* will not pass *varitarabhasmaparikhsha* as they are hygroscopic in nature. *Abhrakabhasma* should compulsorily pass *nishandrapariksha* as it is containing shining particles.

5) Physicians are involved in diagnosis and treatment but drug manufacturing is in the hand of pharmacy. So commonly there will be compromise in quality and quantity, and also in lengthy procedure.

SOLUTIONS

Once we analyse problems it is our responsibility to find solutions for the same. Here comes the role of standardization, which is needed for raw material, process and finished product. As far as medicine and formulation are concerned standardization mean "a numerical value /specific property that quantifies the purity and quality of drug and formulated medicine". It helps to bring uniformity in the products by serving as a basis to evaluate similar substance.

Need for standardization:

To rule out the state of uncertainty about identification and use of raw drugs.To frame the best method of preparation to be followed out of many references.To bring uniformity in all the finished products.To combat the toxicity allegations in order to protect the public concern.To meet the demands of ever increasing urbanization and more dependence on ready-made preparation.

Raw drug standardisation:

Include herbal, mineral, animal origin drugs which are used in different formulations. Depending upon various natural factors, zoological conditions, place of availability etc morphology of the same drug differs when collected from different places. Identification of raw drug is most essential part in standardization of raw drug. Many

folded systematic references are available in *Ayurvedic* classics as far as identification features are concerned. Eg: *snigdham, pruthudala, varnasamyuktam, bharatoadhikam,* etc features told for *Abhraka*[6].

Modern parameters used to standardize raw drug:

1) Identification on the basis of morphological characters:

Organoleptic characters, name of the drug in Latin, English, regional languages. If more than one species is concerned with given sample then their different characteristics, identification features, features of genuine sample (macro, micro), drawing and photography of that drug is to be known. Its collection methods are to be noted. The main therapeutic applications are to be maintained.

2) Presence of foreign matter:

A good sample should be devoid of that.

3) Evaluation of physico-chemical constants:

Acid insoluble ash, pH, water soluble ash, specific gravity, loss on drying etc are to be carried out.

4)Qualitative analysis:

Phytochemical analysis, volumetric analysis, gravimetric analysis, and some special spotting methods by using different chemicals can be adopted.

By these, different elements &different phytochemical constituents present in the drug can be known.

5) Chromatography: is done if drug is of herbal origin.

6) Metallic compounds (following analysis are done)

a) XRD (X-ray diffraction)

b) DTA (Differential thermal analysis)

c) Flame photometry

d) AAS (Atomic absorption spectroscopy), ICP-AES (Inductively coupled plasma emission spectroscopy), XRF etc are the sophisticated technique and instruments used for assessment of different elements in drug with at most accuracy.

Process standardisation:

It include *shodhana, marana, amritikarana* by which drug made suitable for internal administration. These methods are explained in different texts depending on drug with different procedure using different ingredients which often lead to the state that which method is to be selected? Hence process standardization has important role. Their method of preparation differs from one pharmacy to the other, till date it is not standardized and they differ macro-microscopically.

Hence in this regards following points can be considered.

1) Weight variation:

The weight of raw material collected, weight loss during each step of procedure and weight of end product should be recorded well.

2) The method of size reduction & processing techniques:

The size reduction is an important step in the preparation of most of the formulation. It is essential to note which method is followed to reduce a particle size, such as manual/by any machines.

3) Temperature pattern:

To prepare bhasmas of metals and minerals use of different gradiation of temperature is essential, so recording temperature pattern is essential to standardize a procedure.

4) Qualitative and quantitative analysis:

Qualitative and quantitative analysis of different samples collected in different steps of same procedure adopted for the preparation of a formulation is also necessary to standardize a procedure.

5) Even special observation during process, special precaution during process & sterilization techniques adopted should be recorded well to standardize a procedure.

Standardization of final product:

Here both *Ayurvedic* and modern parameters are followed.

Classically mentioned *lakshanas* of finished products and confirmative test mentioned to assess quality of that particular formulation is also very essential to provide vital information in standardization of particular formulation.

Modern parameters:

1) Organoleptic characters:

Taste, smell, touch, colour/appearance are included.

2) Physical evaluation:

- pH[7]:

This test was conducted to assess the pH of given sample which express the degree of acidity or alkalinity.

-Total ash value:

This test helps to find out the inorganic salts in a sample on igniting. Total ash value represents the inorganic salts naturally occurring to it or deliberately added to it as the form of adulteration. Therefore it is a criteria to judge the identity or purity of sample.

- Acid insoluble ash:

This test is to determine adhering dirt, silica material and sand. It expresses quality and purity of the given sample.

-Water soluble ash:

It determines the water soluble percentage of drug in the given sample.

-Moisture content:

This test identifies loss of moisture content in a given sample on drying, the remnant material indicates the weight of solid active substances of the given sample. The moisture content of a drug should be minimized in order to prevent decomposition either due to chemical change or due to microbial contamination.

3) Chemical evaluation:

-Qualitative analysis:

Eg: qualitative analysis of lohabhasma

Namburi Phased spot test:

This technique is known as phased spot test. This helpful in the detection of the continued chemical reaction that takes place gradually between two chemical substances on static media at every second or even a fraction of a second.

-Quantitative analysis:

Possible by using different instruments like:

X-ray fluorescence spectroscopy, Atomic absorption spectroscopy etc

4) Microscopic evaluation:

-Particle size determination:

Particle size determination can be defined as the estimation of average size of the particles. Particle size of the drug effects its absorption hence can assess the rate of absorption. Crystalline structure can be identified by using X-ray diffraction method.

5) Biological evaluation:

Experimental evaluation is mainly meant for assessing the quality as well as the efficacy of the drug. This biological assay supports the standardization. Generally a known drug can be safe to humans but to study in detail at times we are forced to give it in animal models.

Biological assay methods:

It includes Toxic, Symptomatic and Tissue methods.In the toxic and symptomatic techniques the animals are used, where in tissue method, the effect of a drug is observed on isolated organ or tissue.

Toxicity study is used for evaluating the potential toxicity of the drug.

Following test are performed on laboratory animals for the detection of toxicity of a compound

a) Acute toxicity test.

b) Sub acute toxicity test.

c) Chronic toxicity test

Symptomatic method:

Symptomatic method is one of the bioassay technique adopted to see the efficacy of the drug where particular animal is selected for the study.

Eg: If we consider *lohabhasma* particular indication will be selected and that is tried on animals by considering standard therapeutic dose as control group and which is compared with trial group.

By this method only we can standardize the therapeutic efficacy of a particular bhasma.

Ancient parameters

Test for physical nature of bhasma include:

- *Varitara*[8]
- *Rekhapurnatha*
- *Anjanasadrushasukshmatva.*
- *Nischandra.*
- *Mrudutwa and slakshanatwa*

Test for chemical nature:

- *Nirutha*[9]
- *Apunarbhava*
- *Visistavarnotapatti*
- *Nirdoomatwa*

SIGNIFICANCE OF STANDARDIZATION

- Facilitates quantitative analysis of bhasma-to know percent of contents.
- Helps to assess active principle of particular bhasma.
- Results in high quality product.
- Helps to understand genuineness of bhasma.
- Proper formation of bhasma can be assessed.
- Easy for dosage fixation.
- Therapeutic merits of *bhasma* can be known.

CONCLUSION

- Standardization is the first and foremost step for globalization in any field.
- It was explained by our *acharyas* with *Ayurvedic* parameters which is not sufficient in present day scenario & it is a matter of discussion.
- Using modern techniques effectively without compromising in our classical formulae is the need of the hour.
- When the bhasma passes through all these steps it will be definitely of best quality which certainly results in its better status in and around country leading to acceptance of Ayurveda in the world.

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