



BHAVANA SAMSKARA MAKES THE MEDICINE PERFECT

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ABSTRACT

Samskara is an important concept led by ancient Ayurveda scholars and is defined as transformation of the inherent attributes of a substance which leads to the addition of new properties. Samskara does qualitative alteration in the substance for the improvement, enhancement, modifications, lowering bad effects and any such procedure. Various modes of Samskara are mentioned in Ayurvedic pharmaceuticals such as Svedana (steaming), Mardana (grinding), Manthana (churning), Bhavana (wet grinding) etc. Bhavana is a process of wet grinding in which drug powders are ground with specific liquid media for particular period to bring minute particles of the drug come in contact with the liquid media. Impregnation of the properties of the liquid media to the drug leads to unique and suitable physico-chemical changes in drug, hence the potentiation of therapeutic efficacy.

KEYWORDS: Samskara, Transformation, Process, Bhavana, Wet grinding, Impregnation.

INTRODUCTION

There is nothing in the universe, which cannot be used as medicine, but necessity to employ proper yukti (intelligence) according to the need of the situation. Naturally available drugs need to be transformed in to a definite form to render it fit to be used as medicine. This act of transformation of a crude drug in to suitable form is achieved through a process called Samskara. Samskara is the only factor by which one can make modifications in the panchabhautika (5 basic elements) composition of a drug, there by forming new drug according to requirement. Bhavana is a commonly used pharmaceutical process where crude drug powder is triturated with liquid media to enhance the therapeutic property, as well as make it suitable and safe for internal administration, is mentioned as one of the Samskara.

Samskara

Samskara can be defined as the process or tool by which drug is modified as required. The word Samskara has different meanings in different sciences. But in Ayurveda it means as making perfect, refining, making ready, preparation, cooking, dressing etc. Ayurveda has employed the term Samskara more in regard with drugs and diet i.e. processing and preparation. Acharya Charaka^[1], defines Samskara as transformation of inherent attributes of a substance is created by the addition of water, application of heat, cleansing, churning, storing in a specific place for optimum time period, climate, flavouring, wet grinding and preservation. Though the clear cut definition of

Samskara is not given in the text Astanga Sangraha^[2], it is mentioned as the processes by which Samskara could be done on the substances like dilution, application of heat etc. Samskara increases the properties of the drug as well as removes the properties which are not required in that substance. That is explained by the term "Gunantharadhana" in Charaka Samhita. "Guna" means properties or attributes of substance. "Antar" has different meaning such as in the middle/between/in/into/inside/amongst, within/in the middle or interior/inside etc. "Adhana" means placing, putting upon, imparting or infusing. Accordingly the word Samskara means "Imparting new properties in the substance". Synonyms of the word Samskara is found in Charaka Samhita as well as Commentary of Chakrapani at different places showing different aspects such as Karana, Kriya, Vidhi, Kalpanam, Upakalpana, Abhisamskara, Prakkalpanam etc. Some are showing its meaning as a process, some as methodology, some as a tool, some showing causatively, while some showing utility. Acharya Charaka had mentioned Samskara in properties of the drugs which required for treatment (Chikitsopayogi gunas). This indicates importance of Samskara in the treatment modality. Samskara has got three main objectives i.e Gunotkarsha (Potentiation), Vibhaga (Division), Bheda (Variation). Gunotkarsha says about enhancement of existing properties of the drug whereas vibhaga means decrease in the potency of unwanted existing properties. Bheda brings change in properties or it may lead to the manifestation of entirely new properties in the drug.^[3] Change in the properties of

the drugs can be explained on the basis of reaction or interactions taking place at mahabhuta level, there by altering the panchabhautika composition of the drug. Mode of arrangement of mahabhutas in a particular drug also affects the resultant properties.

Bhavana

Bhavana is one among the Samskara, described by Acharya Charaka^[1], which enhances the therapeutic properties of the drugs as well as the qualities of the drug. Bhavana is unique and distinct pharmaceutical procedure in which powdered drug or mixture of drugs is completely made wet in the liquid media and grinded till the complete absorption of liquid in to the powder.^[4] Bhavana is also defined as the process in which the powdered drug submerged in liquid media for whole night and during day time it is to be dried under sun light.^[5] The whole procedure is called as one Bhavana. Here duration of each Bhavana always depends on the quantity of liquid & nature of liquid added, nature of the powder which is to be triturated, pressure applied during trituration, size of khalwa yantra(morter & pestle) and climatic conditions. Repetition of this process depends upon the, purpose of Bhavana and therapeutic property required in the particular product and also based on classical inference.

Selection of liquid media depends on the property required in the drug which is to be subjected to bhavana process, as well as drug should not soluble in it. Commonly plant extractives like expressed swarasa (juice), kwatha (decoction), hima (infusion) or animal products like urine, milk are used for the same. According to the text Rasatarangini, the liquid added should be optimum in quantity so as to keep the powdered drug wet in the beginning of grinding⁴. According to the text Bhaishajya Ratnavali quantity of liquid should be sufficient to do the complete immersion of the powdered drug.^[5] The same criteria are pronounced as Ardrata (wetting), Kardmabha (mire like consistency), Samplavana (immersion) and Ekibhuta (becoming homogeneous mixture) in classical text books. Here quantity of liquid required varies with the quantity and nature of the drug. More the quantity of drug larger will be the liquid and for small quantity of drug liquid required will be less. Similarly liquid quantity also depends on the moisture content of the drug as well as absorbent capacity of the drug. Quantity of liquid required for first Bhavana is always more when compared to second, third etc. If the liquid used in Bhavana process is kwatha (decoction), method of preparation is specified clearly. For the preparation of decoction raw drug should be taken equal to the quantity of drug which is to be subjected to Bhavana process and boiled over mild fire by adding eight parts of water. Once the water quantity reduces to 1/8, it should be filtered and used for each Bhavana.

Bhavana process is applied to fulfil different purposes in Ayurvedic pharmaceutical field. It is used for the

Shodhana(purification) & Marana(incineration) of the drugs, Amriteekarana & Lohiteekarana of the bhasmas, as well as preparation of medicines like Vati, Pisti, Kupipakwa rasayanans & Pottali rasayanans. It is also used as a preoperative procedure in Satwapatana(extraction of metals). In most of these preparations number of Bhavanas is specified according to the experiences of the Acharyas. In some references duration of Bhavana is mentioned in hours or days. If both are not mentioned it should be considered as seven days or process is continued till the appearance of certain features that is called as Subhavita lakshanas i.e. Softness and smoothness of triturated mass, conversion into desired shape, attainment of flat disc shape on pressing and not get powdered.

During ancient times khalwayantra (mortar and pestle) was used for the Bhavana process, this is a kind of manual processing used by the Acharyas. It is made up of stone, iron or wood. In this type of grinding the particle size reduction occurs by compression and attrition principle. End-runner mill and Edge-runner mill (also known as Chilean mill or Roller stone mill) are the mechanized forms of mortar and pestle-type compression commination. This milling equipment consists of two heavy wheels made of either stone or metal, connected by a shaft. The wheels rotate at its axis in a shallow circular pan. The material to be milled is fed into the centre of the pan and is worked outwards by the action of the wheels. Scrapers are employed in scraping the material constantly from the bottom of the wheel vessel after which it is feed to the wheel were it gets crushed to powders. The principles of size reduction applied by these mills are crushing due to heavy weight of the stones or metal and shearing force which is as a result of movement of these stones or metal. In the End-runner mill, a weighted pestle is turned by the friction of material passing beneath it as the mortar rotates under powder. The Edge-runner mill has the pestle equivalent mounted horizontally and rotating against a bed of powders. These mills are used in the size reduction of non-sticky materials.^[6] Selection of equipment depends on quantity and nature of drugs is to be subjected to Bhavana, duration available for grinding, availability of equipment as well as cost effectiveness.

DISCUSSION

In modern pharmacology, mechanical technique to decrease the particle of solids is generally classified in to three categories: dry milling, wet milling and high pressure homogenization. In order to produce particles in the semi micron range and further increase solubility, technique such as wet media milling have been developed. Milling involves the application of mechanical energy to physically break down coarse particles to finer ones and is regarded as a "top-down" approach in the production of fine particles. Fine drug particulates are especially desired in formulations designed for parenteral, respiratory and transdermal use. The mechanisms by which milling enhances drug

dissolution and solubility include alterations in the size, specific surface area and shape of the drug particles as well as it leads to liberation of reaction components due to cell breakage.^[7] Moisture holding capacity of the drug increases with reducing particle size.^[8] Though the process Bhavana is a kind of wet media milling, purpose is to prepare an efficacious medicine, where size reduction is one of the criteria.

During Bhavana, mixture gets properly mixed and material becomes soft, smooth and sticky, which facilitates better binding of material and pills or pellets can be made easily; thus facilitating further processing. As liquid media helps in easy and smooth grinding, it nullifies the problem of dust too. But quantity of liquid used should be sufficient to make the particles to wet so that trituration facilitates particle size reduction and quick drying because of heat generated during friction. Larger the quantity of liquid more will be the duration required for drying and sometimes extra heat like sun light exposure is also needed, as explained in the text Bhaishjya Ratnavali.^[5] Because each particle can absorb the liquid till its saturation, after that sun light exposure helps in the evaporation of excessive moisture. Also addition of large quantity of liquid during trituration delays the process of size reduction due to slipping of particles in between mortar and pestle. Once the liquid is dried properly, it re-gains the capacity of absorption of liquid; which facilitates second Bhavana. On exposure to sunlight, chemical constituents of liquid of Bhavana and drug which is to be subjected to Bhavana may undergo photolysis and thus composition of end product may get altered. In some of the preparations like Chandraputi Praval pisti, it is said to perform Bhavana at night time under moon light, so that it will attain better coolant property. This example is sufficient to explain the influence of Sunlight / Moonlight on the drug during Bhavana. In Bhavana process, grinding helps in the production of homogenous material by mixing component materials thoroughly; leading to maintain a consistent average particle size distribution for the formulation, thus allowing for a better quality mixture when creating solid dosage forms such as tablets, vatis. It also modifies the properties of the end product. Liquid media adds bulk to final product thus altering percentage of constituents. Number of Bhavana as well as quantity of liquid used during each Bhavana influences on the final quantity.

Absorption can be defined as the process of one material (absorbate) being retained by another material^[9] (absorbant). In Bhavana process, same absorption principle is observed. Where liquid media impregnates its active principles to the drug particles and converts to a form which is suitable for treating the diseased conditions of the body. Probable frequent alterations in particle size during Bhavana may increase the absorption and improve bioavailability of the end product. The increase in rate of absorption is attributed to an increase in surface area for dissolution as well as decrease in

particle size reduces gastric irritation, because reduced gastric contact period.^[10] Bhavana can add some new properties to material and sometimes it enhances the original properties of drug to be triturated. The selection of media for Bhavana can also have the ability to change the therapeutic value too. This is possible only by chemical reaction occurring between absorbed and absorbing substances. Even the therapeutic action and palatability of drug can be improved and dose can be reduced by logical selection of liquid media and its quantity.

Liquid media plays important role in the purification (shodhana) of the drugs by reducing or nullifying the toxicity of the material and induces desired qualities e.g. shodhana of Hingula, Gairika, Manahshila. Hingula, Gairika like drugs after Bhavana becomes fit for internal administration. It also helps in converting the drugs in to such state which is suitable for further processing like marana where Bhavana is used as an essential pre-treatment. Marana is a process applied on purified metals and minerals to convert them to a form which is efficacious, absorbable and assumable form called as bhasma, through the application of heat after Bhavana process. Where Bhavana process helps in converting the inorganic material to organo-metallic form which is suitable for body and liquid media used in bhavana process acts as a catalyst in the reduction of metals and minerals in to ash form. Accordingly, the selection of media for Bhavana can change the therapeutic value too. Amriteekarana is procedure adopted to remove the persistent impurities from the bhasma, through subjecting the drug to heat after Bhavana e.g Tamra bhasma Amriteekarana where juice of Kumari is used as a liquid media. Colour bhasma which was lost during Amriteekarana is regained by a procedure called Lohiteekarana, where liquid media used in Bhavana process acts as a colouring agent. e.g. use of decoction of Manjista in case of Abhraka bhasma. In case of Pottali kalpana liquid media used in Bhavana process acts as a good binding agent with potentiation of therapeutic efficacy. Satwapatana is one more procedure used in Rasashastra for the extraction of metals from the minerals, where Bhavana is used as preoperative procedure, which facilitates easy and better extraction.

Gandhaka Rasayana is an herbo-mineral formulation prepared by giving Bhavana to purified Gandhaka (Sulphur) with liquids prepared out of eleven drugs in a serial manner for eight times each. Different pharmacies prepare it by different procedures according to their ease and feasibility. The main difference is in the number of Bhavanas. Shuchi Mitra worked on the topic "Impact of Bhavana Samskara on physico- chemical parameters w.s.r. to Gandhaka Rasayana prepared by different media and methods".^[11] Physico-chemical parameters were evaluated. The effect of increase in the number of Bhavana on particle size of the Gandhaka was examined. Similarly on attempt was also made to differentiate the structure of the Gandhaka with Bhavana and without

Bhavana by using a very sophisticated x-ray photoelectron spectrometer (XPS) study. There was a slight colour and taste variation observed between the samples of Gandhaka Rasayana prepared with 11 Bhavanas and 88 Bhavanas. Sample with 11 Bhavana, had cream colour with mild astringent taste, while the other had dark green colour with an astringent taste, indicating lesser the number of Bhavanas, lower the concentration of Bhavana dravya in the sample. An analytical study of a more reduced size of particles was found in the sample prepared by 88 Bhavana in comparison of the sample that was given with 11 Bhavana. AES ICP analysis clears that, an absence or presence of a particular element in prior stage and its changed concentration in the final stages or from the original purified Gandhaka to the final Gandhaka Rasayana. After Bhavana element concentration was increased in the sample with 88 Bhavanas. Through XPS, surface anatomy of Gandhaka Rasayana was studied. In case of sample with 88 Bhavanas, had uniform over lapping of the Bhavana liquid, surface was found to be uniform and even. Without Bhavana surface was not uniform. Over all a remarkable difference was observed in the samples with different numbers of Bhavana as well as without Bhavana. Thus Bhavana can be considered as an important and mandatory process during drug processing, affecting the physic-chemical and biological properties of a dosage form.

Neha R Patil worked on the topic “Comparative study of pharmacognostical and pharmaceutical evaluation of Shwasahara Dashemani churna with different no of Bhavanas”.^[12] In this study Cluster of all drugs of Shwasahara Dashemai was taken as a single combination in the form of churna prepared with single Bhavana and another prepared with 7 bhavanas. For bhavana the decoction (kashaya) of the same drugs was used. Accordingly it was concluded as Bhavana has great effect on changing the morphological cell structure of the plants, pharmaceutical parameters such as water soluble and alcohol soluble extracts, particle size, total ash values. Furthermore, there was change in the HPTLC was noted, which suggest the role of Bhavana in altering the physic- chemical parameters of the same drugs with multiple application of Bhavana. These all changes are very useful for better absorption and metabolism of the drugs. Hence it was concluded as Bhavana Samskara is very useful in diseased conditions to potentiate the drug with minimum dose.

Hinguleshwara Rasa is a unique herbo- mineral formulation explained in Bhaishajya Ratnavali, is the combination of purified Hingula, purified Vatsanabha and Pippali, all these combination of drug combat the disease Vatajwara. Bhavana process is not mentioned in the original reference. But later scholars by their experiences suggested Bhavana for the same combination of drugs with Lemon juice, which enhances the efficacy of the drug. Nisha. A did the study on the same topic under the title “Analytical and experimental

evaluation of role of Bhavana in the assessment of Antipyretic effect of Hinguleshwara Rasa”.^[13] In this study 3 samples of Hinguleshwara Rasa tablets were prepared by giving Bhavana with lemon juice, just mixing with lemon juice and mixing with water. Samples were subjected to physic-chemical analysis and antipyretic effect of Hinguleshwara Rasa was studied through animal experimentation. Through the results obtained by the study conclusion was given as Bhavana enhances the therapeutic efficacy of the drug by reducing the particle size, increasing the rate of disintegration, imparting more potency to the drug. Bhavitha Hinguleshwara Rasa has got long and sustained antipyretic activity profile in comparison with other two samples of without Bhavana. These conclude the importance of Bhavana as a Samskara in increasing the therapeutic efficacy of the drug.

CONCLUSION

Formulations of Ayurveda consist of herbal, mineral/metal and animal origin drugs, which needs to be transformed in to a definite form to render it fit to be used as medicine. The act of transformation of a crude drug in to suitable form is achieved through various processing together called as Samskara. Bhavana is one such process where powder drug is triturated with liquid media in which the drug is insoluble, till it completely becomes dry. Where the active principle of the liquid media retains in the particles of the drugs results in potentiation of drug efficacy, better quality, as well makes it safe for internal administration. More the number of Bhavanas higher will be the potency, there by the therapeutic efficacy. The studies conducted on Bhavana process also concluded as, Bhavana has got great effect on changing the morphological cell structure of plants, pharmaceutical and physic-chemical parameters. Furthermore it also helps in enhancing the therapeutic efficacy of the drugs.

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