

Critical Review of Nanotechnology in Rasshastra Bhasma Medicines from Ayurveda Genre

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Abstract

Human intention has its own explanation behind existing. For millennia, humankind has been saddling its interest into request and the cycle of logical strategy. In the event that we think about innovation as a motor, science is its fuel. Study of scaling down (nanotechnology) is controlling matter at nanometer level and the utilization of the equivalent to medication is called nanomedicine. Nanotechnology holds guarantee for cutting edge diagnostics, directed medication conveyance, and biosensors. At the point when we access hold the nanorobots, we will actually want to treat quickly various sicknesses that are a constant danger for humankind today. The current article review the the effect and future implications of nanotechnology in *Ayurvedic* medicines and its applicability.

Keywords - Nano, Nanotechnology, *Ayurved*, *Rasshastra*

1. Introduction

Nanotechnology is a prime technology by modern advanced medical science called pharmacology. It has lot of applicability and importance for *Ayurveda*. If we take it into consideration for drug delivery system versus conventional drug delivery system. Nanos is greek word given by various scientists for the nanotechnology. It helps to deliver a drugs at extremely smaller size. *Ayurveda* is having both herbal drugs and mineral drugs but having large size of the drug molecules as a therapeutic agent. So it may cause limitations to the drug delivery as well as bioavailability and bio solubility of the drugs. Nanotechnology deals with the particle size varying from 0.1 to 100 nm. *Rasshastra* is an important branch of *Ayurveda* which deals with mostly herbomineral preparations for human use. In *Rasshastra* there is an important concept of medicine group called as *Bhasma* which is incinerated ash. The important uses of *bhasmas* are anti-aging, immunomodulator and having faster action called as *Rasayan*

property by *Ayurveda* ¹ Bhasmas mostly contain various metals like Gold, Silver, Copper, Zinc having end products like *Swarna bhasma*, *Rajat Bhasma*, *Tamra bhasma* and *Yashad Bhasma* respectively. Bhasmas mostly prepared by use of *Mardan* (grinding) and *Maran* (Incineration) of metals and *Ayurvedic* drugs herbal juices with some important *Ayurvedic* drugs for the processes. At the end of the *bhasma* preparation method minerals and metals becomes finer in size. There are several instruments available to detect the size of the *bhasma*. Some of them claimed that these *bhasmas* are seems to be nanosize. AFM (Atomic Force Microscope), SEM (Scanning Electron Microscope) analyzed and detected Gold *bhasma* (*Swarna bhasma*) at the size of 56nm. So this study targets the review of applicability and scientific studies done on *Ayurvediya Rasshastra* medicines as a nano drugs.

2. Aim and objects

To identify the nanotechnology in *Rasshastra* medicines from available resources from the internet.

3. Materials and methods

The available literature from internet source was reviewed for this study. The literature of the English language were only considered for the review.

4. Some of the important *bhasmas* in *Rasshastra* -

4.1 *Swarna* (Gold) *Bhasma* –

Indians are using Gold (*swarna*) since ancient days. *Swarna bhasma* constitute potash (0.16%), gold (96.76%), silica (1.14%), phosphates (0.78%), ferric oxide (0.14%) ²

4.2 *Rajata bhasma* (Silver *Bhasma*)

One of the important *bhasma* from *Rasshastra*. Mostly used in respiratory diseases. ³

4.3 *Nag bhasma* (Lead *bhasma*)

Nag bhasma is mostly used in diabetes, urinary disorders, leucorrhoea and intestinal disorders. ³

4.4 *Tamra Bhasma* (Copper *bhasma*)

Copper or *Tamra*, an old metal, is likewise known to human civilization that was important for day to day life. The metals were utilized in planning of the composites mostly metal and bronze. The ideal properties of *Tamra* for therapeutic uses were metallic sheen, splendid ruddy in shading, weighty, delicate with having high rigidity. Aside from the utilization of *Tamra* in the executives of sicknesses like *Yakrit Roga* (Liver Disease), *Krimi* (Worms), *Shotha* (Oedema), *Arsha* (Piles), *Amlapitta* (Hyperacidity), *Sthaulya* (Obesity), *Ksaya* (Phthisis), *Pandu* (Anemia), *Swasa* (Respiratory Disorder), *Kustha* (Skin Disease), *Sula* (chest torment), *Grahani Dosha* (Intestinal Disorder) and so forth, the utilization of *Tamra Patra* (copper vessels) has likewise been prompted in a few drug methodology. ⁴

4.5 *Loha bhasma* (Iron *Bhasma*)

Loha is well known metal since ancient days. *Charak* has well explained *loha* for various disorders both for external and internal consumption as a drug. *Loha* can be use for jaundice, anemia, piles and chest pain.⁵

5. Scientific studies done for the particle size analysis of the *bhasmas* by using modern instruments

5.1 Meyers et al, studied that *bhasma* particle size is less than 100nm.⁶

5.2 *Lauh bhasma* was analyzed by Krishnamachary et al stated that Scanning electronic microscopic reveals the lauh *bhasma* particle size is 17 nm.⁷

5.3 Brown et al studied by Transmission electron microscopy (TEM) found that gold *bhasma* (*swarna bhasma*) size is 5657 nm⁸.

5.4. SEM (scanning electron microscope) analysis done by Sharma et al studied that Silver *bhasma* (*Rajat Bhasma*) particle size is 10 to 60 nm⁹.

5.5. Singh et al studied that X ray diffraction study of *Tamra bhasma* particle size is less than 100 nm¹⁰

6. Particle size of *bhasmas* analyzed as nano particle.

Bhasma	Nanoparticle detected	Size
<i>Tamra Bhasma</i> ^[11,12]	Copper oxide	110 µm
	Different oxides of copper	100 nm
<i>Yashada Bhasma</i> ^[13,14]	Zinc oxide	520 µm
	Zinc oxide	1025 nm
<i>Swarna Bhasma</i> ^[15,]	Gold	9.9 µm
	Gold	5657 nm
<i>Rajata Bhasma</i> ^[16]	Silver sulphide	1.04 µm
<i>Trivanga Bhasma</i> ^[17]	Lead, zinc, and tin oxides	500 nm
<i>Samagandhak Kajjali</i> ^[18]	Mercuric sulphide	0.210 µm
<i>Mukta Bhasma</i> ^[19]	Calcite	156 nm
<i>Praval Bhasma</i> ^[20]	Calcium oxide	1015 µm
<i>Vaikranta Bhasma</i> ^[21]	Multi-mineral	520 µm
<i>Muktashukti Bhasma</i> ^[22]	Calcium carbonate	1050 µm
<i>Naga Bhasma</i> ^[23,24]	Lead sulphide	60 nm
<i>Vanga Bhasma</i> ^[25]	Tin dioxide	10100 nm
<i>Shankh Bhasma</i> ^[26]	Calcium oxide	600 nm

6. Discussion

Bhasmas utilized in *Ayurveda* for treatment of different diseases for recent hundreds of years. Presently a day it is demonstrated that the *Bhasmas* are arrangement of nanoparticles of metals and minerals.

These drugs have qualities as a nano agent which could include in a therapeutic use. Utilizing nanotechnology standards and different portion related many impacts can be used. This will likewise assist with expanding the efficacy and bioavailability of the medications of *Rasshastra* medicines.

7. Conclusion

The combined form of nanotechnology with *Ayurvedic* medication will give an exceptionally good efficacy in planning future medication with extemporized bioavailability profile and less side effects. *Ayurvedic* herbo-metallic preparations comprising of *Bhasma* is an old nano medication for treatment of different diseases. Utilizing nanotechnology standards, different portion related antagonistic impacts can be forestalled as it has had the option to lessen the measure of medication that should be used.

This will helps to expand the potency and control the adverse effects if any identified with *Ayurvedic* medications and formulations. In this review article, we can conclude that the utilization of *Ayurvedic* medications in nanocarriers form will increase its capability to treat different ongoing illnesses. They will successfully build the bioavailability and dose of various drugs can reduce remarkably for different health conditions.

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