

Ancient Indian Culture and Nanotechnology

Ramesh Baboo

Assistant Professor
Govt. Girls P. G. College,
Fatehpur-212601.

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ABSTRACT

Nanotechnology technique was not a new phenomenon for ancient Indian society but the word nanotechnology was new for ancient Indians. In ancient India the nanotechnology technique was used in medical treatment of diseases in human beings, weapons used in wars, in steel industry, Indian crafts and in cultural rituals. Charak Samhita is oldest Aurvedic epic in Indian Cultural Society used for treatment of diseased human beings. Concept of reduction in particle size of metals is clearly discussed in Charak Samhita Extreme Reduction of particle size of metals or nonmetals is termed as nanotechnology. From the ancient Indian time the people who are called as goldsmith skilled in preparation or manufacturing of gold or silver ornaments were used to give the Bhasma of gold or silver metals to the diseased human beings. The bhasma was prepared during the process of melting of silver and gold metal for preparation of ornaments. The bhasma was mixture of precious metals and coal powder and other minerals.

Key words: Nanotechnology, Bhasma and minerals.

Introduction

Concept of reduction in particle size in the units of nanometers is termed as Nanotechnology. Nanotechnology was used by ancient Indians is well discussed by Sir Walter Scott in his book "Talisman"¹ in which he has quoted the scene of oct 1192 ad when Richard Lionheart of England met saladin who had a scimitar(Khukhari) of Damascus steel. The Damascus steel is actually Indian steel. Wootz steel² was made with mixture of large quantity of carbon and iron. This steel industry was well developed in southern india. The name Wootz is western version of ukku and ekku of kannada and tamil, meaning crucible steel.

Aurvedic bhasmas^{3,4} were used as nano medicine, it has immense potential to cure

ailments. Charak Samhita is oldest Aurvedic epic in Indian Cultural Society used for treatment of diseased human beings. Concept of reduction in particle size of metals is clearly discussed in Charak Samhita Extreme reduction of particle size of metals or nonmetals is termed as nanotechnology. From the ancient Indian time the people who are called as goldsmith skilled in preparation or manufacturing of gold or silver ornaments were used to give the Bhasma of gold or silver metals to the diseased human beings. The Bhasma was prepared during the process of melting of silver and gold metal for preparation of ornament. The Bhasma was mixture of precious metals and coal powder and other minerals. The recent studies at the

department of Rasa Shashtra faculty of ayurveda, BHU, has claimed the herbo mineral formulation of ayurveda constituting "Bhashama" to be equivalent and in tune with nanotechnology witnessing production of nanoparticles in contemporary era. The reports of studies have been published in two reputed journals like Journal of Scientific and Industrial Research in dec 2010 and in Journal of Biomedical Nanotechnology⁵. The paper also attracted international attention during the three-day international symposium on safe use of nanomaterial and workshop on nanomaterial safety, status, procedure, policy, and ethical concerns, organized by Indian Institute of Toxicological Research, Lucknow.

Evidences of Nanotechnology in ancient India

1. Ancient handicrafts and iron equipments

According to Robert Floyed Curl, Junior Nobel prize winner in chemistry in 1996, Indian craftsman used nanotechnology in Wootz steel as well as in paintings. In 1952 Russian scientists tolled about carbon nano tubes but they were present in sword of Tipu Sultan as well as in Ajanta paintings. Curl also claimed in 95th Indian Science Congress that Indian ancestors have been using this technology for over 2000 years and carbon nano tubes for about 500 years. Indian craftsman used unique smelting techniques to manufacture the Damascus blades which led to nanotisation giving them a unique long

lasting edge. Wootz also had a high parentage of carbon, which was introduced by incorporating wood and other organic matter during fabrication. India, for ages, was a leading exporter of this steel which was used to make Persian daggers which were quite popular in Europe.

2. Ancient Ayurved and metallic bhasmas

The studies have confirmed that bhasmas, which are unique ayurvedic metallic minerals preparations are biologically produced nano particle prescribed with several other medicines of ayurveda. Though, herbo-minerals (Bhasmas and minerals) assumed formulations are used since seventh century, it was only assumed that these medicines have superior level of efficiency in comparison to other ayurvedic dosage forms. Now studies have also established that manufacturing methods of bhasma are in tune of nanotechnology of modern era and bhasma are nearer to nano crystalline materials, similar in physico-chemical properties. Lauha bhasma has a good potential as therapeutics as nano medicines. All bhasmas have some common properties like rasayanas means immuno-modulation and anti aging quality and yogavahi means ability of drug carry and targeted drug delivery. These are prescribed in very minute dose like 15 to 250mg/day and prepared properly they are readily absorbable, adoptable and assimilate in the body without being toxic.

3. Ancient Goldsmith and Bhasmas

In ancient time the goldsmiths which were well known for preparation of ornament, were also known to provide the bhasmas (powder of coal and minerals) for treatment of different ailments in human beings. They were trained to use melting processes for preparation of ornaments of silver and gold metals. Melting process were done with help furnaces and dish of cast iron. During the whole process the particles of gold and silver metals were mixed with the coal powder of the furnaces and due to repeated treatment of high temperature with coal powder, the particle of gold and silver metal reduced to size of nanoparticles. This mixture of coal powder and minerals like gold and silver metal particles was termed as bhasmas. The bhasmas was given as therapeutics to different ailments in human beings by goldsmiths although they were not doctors. Now days goldsmiths who are involve directly in manufacturing of gold and silver ornaments, are used to provide the bhasmas to those who are infected with different ailments.

Conclusion

In the above discussion it is proved that the knowledge about the nanotechnology in

ancient India is well developed in the form of metal technology, handicrafts and ayurvedic bhasmas. Renowned scientist and spokes persons of ancient Indian literature also agreed with the above discussion. Time to time they have given the their views that ancient Indians were skilled to develop nano materials either in their metal weapons or in paintings. Although they do not have the knowledge of word nanotechnology. Charak samhita which was great epic in ancient Indian society for medical treatment of diseased human beings, included bhasmas of metal particles and minerals was used as medicines for ailments. Now a days it is proved that the bhasmas are composition of nanoparticles of metals and minerals with coal powder and also proved that they have characteristics feature in medicinal point of view.

References

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In theory, there is no difference between theory and practice. But in practice, there is.

~ Yogi Berra