

Use of Nanotechnology and Present Day Science in the Ancient Era

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Abstract— The use of nanotechnology had been there even when this terminology was not coined. Our ancestors made use of many materials which were of nanoscale. They were well aware of the use and effect of these materials. The scope of this article is to connect the missing link between the two and understand their point of view or explore how much was they technologically advanced. Before taking pride in ourselves for the inventions and discoveries we claim today let us first find out how much was known in past.

Index Terms—Nanotechnology, nanoscale

I. INTRODUCTION

India has been the land of “Rishis” & “Munies”. It is true saying that “the old is gold”. We take pride in boosting many of our achievements of our ancestors. The pursuit of knowledge was the ultimate aim in our society which was called tapasya and was performed with great devotion and hard work. No wonder the results were amazing. And we have lot of things to boost of our knowledge heritage. Only now when we can measure the exact dimension of materials with the help of sophisticated instruments like electron microscope, scanning microscope, X ray diffraction etc that we can exactly tell the dimension that it is 10⁻⁹ m in length, breadth or height or any one of it to make a nonmaterial[1-2].

II. HOLY MANTRAS

The words of rishis had great powers and it is said what they spoke use to come true. They would sprinkle some water over someone enchanting some mantras and it is believed that it will certainly happen. What was that holy water they sprinkle from kamandals? That certainly will be the power of nanotechnology, the waves plus chemistry.

III. BHASMAS

The use of “bhasmas” in the preparation was of medicinal values. These were given for increasing the immunity system and overall well being was none other than the nano preparations of gold and silver. They were effective because of higher solubility, absorbance and catalyzing effect on the body[3].

Metal Preparations

Bhasmas are either powdered metallic compounds like chlorides oxides, oxychlorides, sulphides etc. or metals in a finely divided state. Bhasmas of mercury, iron, copper, tin,

lead, gold, and silver are said to have medicinal values. Detailed accounts of the Bhasmas are found in many Rasashastra texts. Specific tests have been described to ascertain particle size of Bhasmas.

Methods of preparation and elucidation of therapeutic values of four bhasmas of mercury have been described in medical texts. The main constituents of these are –

1. Kajjali or Rasaparpati : black mercurous sulphide Hg₂ with some sulphur.
2. Rasakarpura: calomel Hg₂Cl₂, useful for treating syphilis.
3. Rakta Bhasma : red mercuric sulphide, HgS.
4. Peeta bhasma: yellow mercuric oxide.

Similarly preparations and medical uses of Suvarna Bhasma, Rajata Bhasma, Loha (Iron) Bhasma, Tamra (Copper) Bhasma, Sisa (lead) and Vanga (tin) Bhasmas have been also described[4-8].

• Swarna (Gold)

The ‘Bhasma’ form of Gold is in metallic state. Quantitatively it is a combination of metallic Gold (96.76%), silica (1.14%), ferric oxide (0.14%), phosphates (0.78%), potash (0.16%), salt (0.078%), and traces of copper and magnesium[9].

• Rajata (Silver)

Quantitatively ‘Rajata Bhasma’ is a combination of metallic silver (52 to 59%), free sulphur (0.675%), ferric oxide (14.33%), calcium (10.769%), silver chloride (0.479%), and traces of sodium, potassium and aluminium. Various useful formulations of ‘Rajata’ are: *Balya, Rasayana, Medhya, Ayushya, Ojo Vardhaka, Vayah sthapaka* etc. The normal dosage range given for ‘Rajata Bhasma’ is 30 mg. to 120 mg[10].

• Tamra (Copper)

Samples with characteristic metallic sheen (*Snigdham*), soft (*Mridulam*), bright reddish in color (*Shonam*), having high tensile strength (*Ghanaghata Ksamam*), heavy (*Guru*), and devoid of impurities (*Nirvikaram*) are identified as best used for medicinal purposes[11].

• Aayasa or Loha (Iron)

As preparations of *Loha* are of foremost importance in Ayurveda therapeutics, proper care should be taken during procedures for its purification and incineration. *Chakrapani* stresses the need to take care when

administering it. *Charaka* emphasizes a special *Ayaskriti* procedure, which converts thin leaves of metal into a fine absorbable form. In addition to these uses, iron vessels were specifically recommended to be used in certain pharmaceutical procedures (*Chikitsa* 1-3/43, 15/187, 16/83, 26/250, 26/274 etc.) Quantitatively, it is a combination of ferric oxide (96.5%), ferrous oxide (2.5%), magnesium oxide (0.8%), calcium oxide (0.3%), together with traces of phosphorus and potassium[12-14].

• **Pittala (Brass)**

Pittala is an important *Misra Loha*, an alloy of *Copper* and *Zinc*, known since the period of *Samhita Kala*. *Charaka* used this metal to prepare *Vasti netra*. It is known as Brass. As per the descriptions available in *Rasa Ratna Samuchaya*, there are two varieties of *Pittala* viz. *Ritika* and *Kakatundi* [15].

• **Kamsya (Bronze)**

It is known as Bell Metal or Bronze. According to the descriptions given in *Ayurveda Prakasha*, there are two varieties of *Kamsya* viz. *Pushpa* and *Tailika*, only the former being acceptable for therapeutic applications. Samples giving a sharp sound (*Teekshna Shabdham*), soft (*Mridu*), smooth to touch (*Snigdha*), slightly grayish (*Eshat Shyamalam*), clear from impurities (*Shubhram/Nirmalam*) and turning red on heating (*Dahe Raktam*) possess the characteristic features of the material preferred for therapeutic purposes[15-18].

POWER WATERS

Water kept in the vessels of gold, silver, copper and other materials were used for treatment of many ailments.

COLORS

The painting used colors from the preparations which were obtained by grinding them to nanoscales

PERFUMES AND ITR

these have been used since ages earlier they were extracts from plants

which were mixed with base oil to prepare itr. Now these chemicals are of known structure and can be made synthetically as perfumes deodorants etc. lot of plants/ grasses are cultivated for their fragrance like lemon grass, rose grass, mint etc. The effect of these fragrances were known for their medicinal properties and psychological effects. The need for perfumes in our tropical country was known even from vedic times the processes of making scented water, perfume sticks, powders and essence have been described in several ancient works like *Gangadhara's Gandhasara*, *Brihat-samhita*, *Manasollasa*, *Gandhavada* and *Gandhayukti*. The aromatic ingredients of some perfumes have also medical properties – for example, *Sukumara Taila*, *Mahanarayana taila*. The aromatic ingredients include *chanadana*, *useera*, *kesara*, *patralia* etc. the perfumes are divided into eight categories

based on the source of aromatic ingredients-leaves, flowers, fruits etc[119-21]

IV. CONCLUSION

It is now known that the existence and use of nanotechnology was always there. We should pick references from our ancient sources and connect to the modern development to take leap in research and technology. Our ancient procedures and method are of immense help and use and research is needed in this area to give it a new start from the old in order to get gold from this old we need to seriously make effort to understand the old systems and traditions and increase our speed of research and contribution in scientific literature.

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