Research Article

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COMPARATIVE PHARMACEUTICAL AND ANALYTICAL STUDY ON KRISHNAVAJRABHRAKA SHODHANA WITH GOKSHEERA AND BADARA KWATHA

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ABSTRACT

Abhraka is one of the most important Rasadravya mentioned in Rasashastra and most widely used in Lohavada, Dehavada and Chikitsa. According to Minerology Abhraka (Mica) comes under Sheet Silicate group. Mica is a complex mineral, tough and hard. Hence Nirvapa is adopted to make it brittle so that it is easy to convert in to powder form. For the Nirvapa Kanji, Gomutra, Thriphala Kwatha and Goksheera were mentioned. In this Study, Goksheera and Badara Kwatha were selected for Abhraka Shodhana as Dhanyabhraka process was not mentioned for Badara Kwatha Shodhita Abhraka. Badara Kwatha Shodhita Abhraka doesn't need Dhanyabhraka process as it becomes small particles as Dhanyabhraka.

Keywords: Krishnavajrabhraka, Nirvapa, Goksheera, Badara Kwatha, XRD

INTRODUCTION

Each and every material in this universe has its own medicinal properties. These materials present in this universe are divided into Stavara, Jangama and Oudhbidha. Among these Oudhbidha dravyas do play an important role in the prevention and treatment of diseases. Rasashastra, the branch of Ayurveda deals with the medicinal properties of these Oudhbidha dravyas. Abhraka is one such material, useful in Lohavad, Dehavada and also in Chikitsa. According to Minerology, Mica is one among the common Rock forming Mineral¹ (Mica, Quartz, Feldspar, Amphibolite, Petalite and Hornblend). Mica is a generic term applied to a complex Aluminosilicate mineral having a sheet or plate like structure with different composition and physical properties. All types of Mica form flat six sided monoclinical crystal with a remarkable cleavage in direction of large surfaces which permits them to split easily into optically flat films when split into films, they remain tough and elastic even at high temperature. According to Ayurveda Abhraka is classified into 4 types based on the characteristic feature exhibited by Abhraka when heated over fire². They are Pinaka, Naga, Manduka and Vajra. Again each one is divided into Swetha, Rakta, Peetha and krishna. Among these Krishnavajrabhraka is considered to be useful for treatment. This can be compared to Biotite. The chemical formula of Biotite is $H_2K(Mg, Fe)_3Al(Si_4)_3$.⁴

Objectives

- To conduct Shodhana of Krishnavajrabhraka using Goksheera² and Badara Kwatha³
- To subject Abhraka for chemical analysis before and after shodhana

MATERIALS AND METHODS

- Krishnavajrabhraka
- Goksheera
- Badara Kwatha

Process I

Shodhana in Goksheera, Raw Abhraka was subjected to Shodhana process according to RRS 2/16-17

Materials

Krishnavajrabhraka - 1kg
Goksheera - 6lts

Equipments

Steel vessels, Forceps, Stove, cloth, Iron Pan

Procedure

1Kg of Krishnavajrabhraka was made into small pieces and heated over fire in an Iron Pan. When it turns to Red hot Abhraka was quenched into fresh milk taken in stainless vessel. The same procedure was repeated for another 6 times.

Observation

- Abhraka turns to red hot gradually and take about 1h to red colour.
- Red hot Abhraka turns to golden colour when it is taken out from fire for quenching.
- When Abhraka quenched into milk within 5seconds milk starts boiling and spilled out from the vessel.
- When Abhraka taken out of milk again it turn to black colour.
- After each Nirvapa Abhraka keep attaining coarse powder form.
- After each Nirvapa weight of Abhraka keep decreasing.

XRD-Badara Kwatha Shodhita –Seventh Nirvapa

Table 1: Percentage of chemical constituents of Krishnavajrabhraka before shodhana after first Nirvapa and after saptama Nirvapa in Goksheera and Badara Kwatha

Name of the chemical constituents	Sample 0(Zero) %	Sample A1 %	Sample A %	Sample B1 %	Sample B2 %
Silica as SiO ₂	36.76	36.63	36.50	36.60	36.52
Titanium as TiO ₂	0.48	0.46	0.46	0.44	0.45
Aluminum as Al ₂ O ₃	33.63	33.62	33.60	33.59	33.59
Iron as Fe ₂ O ₃	3.79	3.73	3.72	3.70	3.69
Magnesium as Mgo	11.89	11.89	11.87	11.85	11.85
Calcium as Cao	2.57	2.64	2.68	2.53	2.52
Sodium as Na ₂ O	1.85	1.03	1.83	1.82	1.79
Potassium as K ₂ O	6.83	6.82	6.00	6.80	6.80

DISCUSSION

Pharmaceutical Process

The samskara adopted for the Shodhanan of Abhraka is Nirvapa i.e. heating the material to red hot and quenching in liquid media. In this process the reaction occurs at 3 stages.

During heating.

During Quenching

Post quenching interaction between Abhraka and the liquid.

Biotite is formed by covalent bonds between non metallic ions and metallic bonds between metallic ions. These ions of metals and non metals are combined together to form a molecule with the help of ionic bonds formed by electrostatic force between anions and cations.

Probable Mode of Action of Nirvapa

The probable mode of action of Nirvapa is explained on the basis of Kinetic theory of Matter.

Phase of heating

- Solid crystal at a rest has packed particles which are closed together in a lattice form and vibrate in their fixed portion.
- But when temperatures increases, the particle gain energy and vibrates more strongly and occupy more spaces, this causes the solid to expand.
- At the same time, water molecules evaporate and come out through mineral separating Abhraka in various layer along its parallel cleavage planes.
- Due to increase in intra atomic distance, electrostatic forces get weakened.

- Due to continuous heating, particles get enough energy to break forces holding them together and they can move around.

Phase of Quenching

Water media immediately penetrates inside and water soluble impurities get dissolved in it due to breaking of remaining ionic bonds. While sudden change in temperature causes breaking of other strong bonds too and this destroys its flexibility and makes it more brittle.

Phase of Post Quenching

Post quenching interaction between liquid media and minerals during instant cooling. Due to heating, the particles which are in random position when come in contact with liquid media, each molecule of the minerals gets surrounded by liquid and the cooling takes place forming grains containing liquid media. This may be the reason to impart the properties of Nirvapa dravyas in minerals. In this process, quenching was done for 7 times, which naturally;

- Reduced hardness.
- Impose the properties of various media.
- Cause the colour change.

Analytical Study

The analysis of Ksheera Shodhita Abhraka shows that during the first Nirvapa, the transfer of Calcium from milk to Abhraka is more than during seventh Nirvapa. From first Nirvapa to seventh Nirvapa there is a decrease of other chemical constituents of Abhraka except Calcium, this has increased in shuddha Abhraka after seventh Nirvapa when compared to raw Abhraka and first

nirvapita Abhraka. There is a slight decrease in percentage of all the constituents when compared to raw Abhraka. In XRD, there was a decrease in constituents and some Magnesium Hornblend has been removed from Abhraka after Shodhana.

CONCLUSION

Abhraka is one of the most important Maharasa, very much useful in Lohavada, Dehavada and Chikitsa. Even though many methods were mentioned for Shodhana, Nirvapa is the best method. While repeating the procedure for seven times, the unwanted or the impurities gets separated as the Abhraka turns to powder form. Repeated Nirvapa reduces the hardness and become more brittle as red hot. Abhraka immediately come in contact with cold liquid. The percentages of all the constituents get reduced during shodhana process in both Ksheera Shodhita and Badara Kwatha Shodhita Abhraka. But Calcium content was found to be increased in Ksheera Shodhita Abhraka as the Calcium has inflexed to Abhraka from Milk. During the process of Nirvapa in Badara Kwatha,

Abhraka gets into smaller particles and it is almost similar like Dhanyabhraka. Hence Dhanyabhraka procedure is not mentioned for Badara Kwatha Shodhita Abhraka and can be taken for Marana process directly. XRD showed that there was a slight change in the structure of Shodhita Abhraka due to Nirvapa.

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