

ANALYTICAL COMPARATIVE STUDY OF DIFFERENT SHODHAN DRAVY AND DIFFERENT PISHTI DRAVYA W.S.R. TO AKIK

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ABSTRACT

Akik is very familiar Semi Precious stone in the world of stones. It is frequently used in many forms like ornaments, gifts, etc. But it has very good medicinal value which is practiced by traditional *Vaidya's & Hakim's*. **Objective:** Analytical Comparative Study of Different *Shodhan Dravya* And Different *Pishti Dravya* w.s.r. to *Akik*. **Method:** Best quality of *jalrahit akik* taken for analytical study and prepared by two methods i.e. *Gulab Arka & Kewda Arka* for *shodhan and pishti* as per classical text references. **Result:** Analytical study shows that quantitatively and qualitatively it contains SiO_2 and absorption in UV spectrum is also of standard value of agate. In microscopic level it shows nano-particles with agglomeration. **Conclusion:** Evaluation of Analytical study shown that the preparation with two different methods has slight difference in analytical value & physico-chemical properties.

Keyword: Ayurved, SemiPrecious Stone, Akik, Agate, Analytical Study

INTRODUCTION

*Sheeto rukshaschittadosheshu geeto raktastambhee dardhyakari dvijaanaam |
Hemna saakam saadhitoateev vrushyah slakshanah shonah shasyatekoapyakeekah ||
Siddhabheshajamanimaalaa (Paaradaadi Vargah - Dviteeyo Guchhah - 303)¹*

Akik is semi precious stone which has properties of *sheet* (cold), *ruksha* (dry) *guna* and it work as *Raktastambhak* (To stop the bleeding) and *Danta* – *Dardhyakark* (strengthen the teeth). It has very strong result with *swarna bhasma* as *Vrushya karma* (*Aphordiasic Ac-*

tion). As per *vruddha vaidya and hakim's* opinion it gives very good result as *Hruda balya* (strengthen the heart), *Garbha Rakshoghni* (prevent foetus to get abort). As per traditional method *akik pishti* (powder) is used more frequently than *bhasma* as *ratna maran* process

is *varjaya* (restricted) and as per classical text it is prepared by two method i.e. *Gulab Arka* & *Kewda Arka*.

Grahya -Agrahyatva² :-

Best quality of *Jalrahit* (without veined) *akik* to be taken for medicinal preparation.

Shodhan of Akik² :-

Pure and *Jalrahit akik* heated and dipped in *arka gulab* or *arka kewda* for seven times each.

Method of Preparation² :-

For preparation of *akik pishti* crushed *akik* powder has prepared and bhavna of *arka gulab* and *arka kewda* is used for 7 times each.

Lakshan of Pishti² :-

That it is triturated with *gulab arka* & *kewda arka* and ground to a fine *churna*(powder) form is termed as *Pishti* or *Pishtika*.

DISCUSSION

The aim of this study is to know the particular physico-chemical changes and effect of different *Samaskaras* {*Shodhan, pishti* etc. (method of preparation)} during the pharmaceutical processing. These are the following parameter chosen to evaluate the process. The method employed was as per Ayurvedic Pharmacopoeia of India.

Classical Analytical Parameters² :- Organoleptic Character, Rekhapoorntwa, Slakshnatva

Table 1: Organoleptic Character

Sr.	Characters	AGBP	AKBP
1.	<i>Shabda</i> (sound during chewing)	No	No
2.	<i>Sparsha</i> (feeling during touch)	Soft	Soft
3.	<i>Rupa</i> (physical colour)	Light whitish red	darkish red
4.	<i>Rasa</i> (taste)	Like <i>gulab</i>	Like <i>kewda</i>
5.	<i>Gandha</i> (smell)	Like <i>gulab</i>	Like <i>kewda</i>
6.	<i>Rekhapurnata</i> (microfine powder passes in finger lines)	Present	Present
7.	<i>Slakshnatvam</i> (soft touch)	Present	Present

- On organoleptic evaluation both AGBP and AKBP showed smoothness in touch with essence of *gulab* and *kewda* in taste and produced odour of resp. flower *arka*.
- AGBP is slight light red in colour then AKBP.
- There is no perceptible sound during chewing.
- Weight of *pishti* increased by 1-1.5gm at each *bhavna*.
- Weight before process 313 gm and after process 331.5 gm of AGBP was achieved.
- Weight before process was 288.7 gm and after process was 308.2 gm of AKBP was achieved.

- Weight of AGBP has increased by 18.5 gm where weight of AKBP has increased by 18.8 gm. Hence there is no significant difference found in weight increment.
- *Rekhapurnata* and *Slakshnata* test indicates micro fineness of the *Pishti* with soft touch for body susceptibility.

Here both the *Pishti* passed all the classical physico-chemical parameters, so both the *Pishti* should be considered as properly prepared and having properties according to classical standards and found difference in colour, odour taste.

Physico-Chemical Parameter^{3,4} :-

Loss on drying, Total Ash Value, Water soluble ash, pH Concentration Value, Conductivity Test.

Table 2: Physico-chemical Character

Sr.No.	Test	AGBP Value	AKBP Value
a)	Loss On Drying	0.023 gm	0.008 gm
b)	Total Ash Value	0.026 gm	0.018 gm
c)	pH Estimation:	8.20	8.30
d)	Acid Insoluble Ash	0.029 gm	0.033 gm
e)	Water Soluble Ash	0.006 gm	0.023 gm
f)	Conductivity Test	107.1	107.5

a). Loss On Drying:-

To determines the amount of volatile matter (i.e., water drying off from the drug).

- The LOD values of AGBP and AKBP does not make any significant effect on moisture content.

b). Total Ash Value:-

Calculate the amount of ash with reference to the air-dried drug.

- Hence, it shows that the *Bhavana Dravya* used in *pishti* process does not make any significant effect on inorganic contents.

c) Acid Insoluble Ash:-

Calculate the content of acid-insoluble ash with reference to the air-dried drug.

- The acid insoluble ash values of AGBP and AKBP do not show any major difference on the acid insoluble ash values.

d). Water Soluble Ash:-

Calculate the amount of water-soluble ash with reference to the air-dried drug.

- The Water soluble values of AGBP and AKBP do not make any significant effect on the water soluble values.

e). pH Estimation:-

It indicates the Acidity or Alkalinity of a solution. As it shown alkaline nature for both sample.

- There is no remarkable difference obtained in pH value of AGBP & AKBP.

f). Conductivity Test:-

Conductivity of a substance is defined as 'the ability or power to conduct or transmit heat, electricity or sound'. When an electrical potential difference is placed across a conductor, its movable charges flow giving rise to an electric current. This property is called conductivity.

- The Conductivity of AGBP and AKBP do not make any significant effect on the conductivity.

Analytical Parameters^{3,4} :-

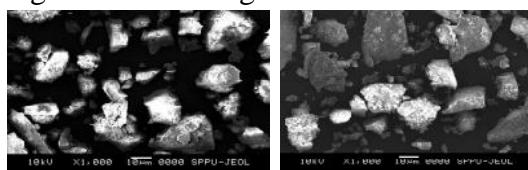
SEM (Scanning Electron microscopic) & EDS (Electronic Dispersive Spectrometry), UV Spectrometry, XRD (X-Ray Diffraction).

1. SEM & EDS^{5,6} :- *Bhavit* (coated) & Dry form of sample taken to perform the test which shown these results

- a) SEM: The scanning electron microscope uses a focused beam of high energy electrons to generate a variety of signals at the surface of solid specimens. The signals

that derive from electron-sample interactions reveal information about the sample including external morphology (texture), chemical composition, and crystalline structure and orientation of materials making up the sample. In most applications, data are collected over a selected area of the surface of the sample, and 2-dimensional image is generated that displays spatial variations in these properties.

Fig 1: AGBP Fig 2: AKBP



- In AGBP & AKBP showed the presence of nanoparticles.
- Some of the particles got fused with each other.
- Particles were not of similar shape.
- Agglomeration of particles was observed.

b) EDS: The Electron Dispersive Spectrometry makes use of the X-ray spectrum emitted by a solid sample bombarded with a focused beam of electrons to obtain a localized chemical analysis. **Qualitative analysis** involves the identification of the lines in the spectrum & **Quantitative analysis** (determination of the concentrations of the elements present) entails measuring line intensities for each element in the sample and for the same elements in calibration Standards of known composition.

Table 3: Qualitative & Quantitative Analysis of AGBP & AKBP

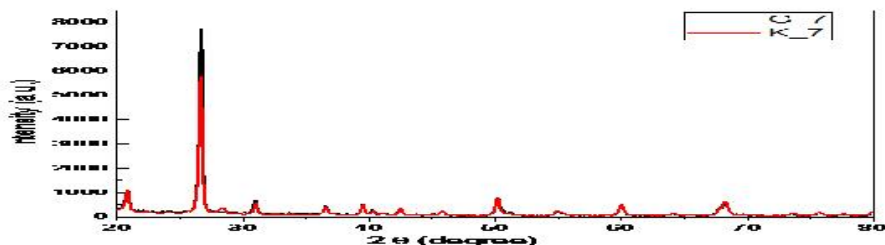
Element For AGBP	Weight%	Atomic%	Element For AKBP	Weight %	Atomic%
C	60.13	15.38	C	56.80	17.88
O	375.00	72.02	O	281.26	66.47
Mg	2.13	0.27	Mg	1.61	0.25
Si	110.20	12.06	Si	110.14	14.83
S	0.29	0.03	S	0.74	0.09
Cl	0.42	0.04	Cl	0.40	0.04
Ca	2.04	0.16	K	0.52	0.05
Cu	0.60	0.03	Ca	2.12	0.02
Zr	0.26	0.01	Fe	0.75	0.05
In	0.74	0.02	Cu	1.29	0.08
Total	551.81		Zn	1.00	0.06
			Total	456.3	

- Quantitatively & Qualitatively Analysed as Element of Silicon (SiO₂).

3. XRD Study⁷:- X-ray powder diffraction analysis (XRD) is a rapid analytical technique primarily used for phase identification of crys-

talline material (e.g. minerals, inorganic compounds) and can provide information on unit cell dimensions.

Fig 3: XRD peak for AGBP & AKBP



- AGBP & AKBP analyzed using X-ray diffraction shows peaks of SiO₂.
- AGBP crystalline size little different than AKBP.
- AGBP and AKBP there is no difference from standard d spacing of SiO₂ so it

proves that it is standard composition of SiO₂.

9. UV Spectrometry⁸:- It involves measuring the amount of ultraviolet radiation absorbed by a substance in solution. UV Absorption Spectra for AGBP & AKBP with Standard SiO₂ Data.

Table 4: Absorption Spectra for AGBP & AKBP

Sample	λ_1 nm (Violet)	λ_2 nm (Green)
AGBP	393	509
AKBP	391	504

- On the basis of preliminary test i.e. color of sample is reddish.
- Absorption spectra have been fitted by Gaussian function. It shows two prominent features in Violet and Green region.
- We can conclude here that this material reflect in red region, absorb in Green and violet region, where as it may transmit in middle-UV region ranges from 300 to 400 nm. These two absorption region are associated with the SiO₂ effect levels.
- The UV Spectrometry of AGBP and AKBP shows peaks of similar wavelength which means that, the amount of ultraviolet radiation absorbed by substances in both the solutions are similar.

CONCLUSION

- Preparation of *Akik Pishti* shown the slight difference in colour and odour taste resemble as *bhavna dravya* of respective *pishti*.
- Comparative analysis performed for preparational process for prepared sample with different analytical test for quantitative and qualitative analysis which has authenticated the drug and also checked many analytical tests to evaluate the difference. But there is slight difference in all analytical values.
- Here, from all these studies it can be concluded that, different *PISHTI DRAVY* used in preparation of *PISHTI*, shows slight remarkable difference in physico-chemical properties of the *Pishti*.

REFERENCES

1. Sri.R.Kaladhara Bhatta & Sri Laxmiram Swami, Siddhabheshjyamanimala, Krushnadas Acadamy, Varansi, 1999.Paradadi varga 2/303.
2. Dr. Siddhinandan Mishra, Ayurvediya Rasashastra,15 Edition,Chaukhamba Oriyantaliya, Varanasi, 2006.Upratna vargeekaran p.564-566.
3. Government Of India, Department Of Ayurved, Ayurvedic Pharmacopoeia of India, Part 2 Vol 3, 1st edition, The Controller publications civil lines ,Delhi; 2009.
4. Dr. D.R.Lohar, Protocol For Testing Of Ayurvedic, Unani & Siddha Medicine, GOI, Dep.of Ayush, Ministry of Health and Family Welfare, Pharmacopeial for Indian Medicine Ghaziabad,p.17,25.
5. http://serc.carleton.edu/research_education/geochemsheets/techniques/SEM
6. cfamm.ucr.edu/documents/eds-intro.pdf
7. https://serc.carleton.edu/research_education/geochemsheets/techniques/XRD.html.
8. <http://www.omicsonline.org/uv-visible-spectrometric-method-development>.

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