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Comparative Pharmaceutical and Analytical Study of *Manasheeladi Vati* Prepared from Two Different Methods of *Manasheela Shodhan*

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Abstract

Manasheela (realgar, arsenic disulphide) has been used in ayurvedic medicine since ancient times for the treatment of conditions such as skin diseases, cough, asthma, certain eye diseases and psychological disorders. *Shodhana* (purification) is an integral part of ayurvedic processing especially for poisonous substances before they can be used for therapeutic purposes. In the case of *Manasheela*, which contain the heavy metal arsenic, it can be purified by two ways. One by carrying out seven levigations (*Bhavana*) of Zinziber officinalis Roscoe *(Ardraka)* juice and other by keeping it for three days in lime water *(Churnodaka).Ashodhita Manasheela* (unpurified realgar), *Ardraka Shodhita Manasheela* (realgar purified with ginger juice) and *Churnodaka Shodhita Manasheela* (realgar purified with lime water) were investigated by examination of the relevant physico – chemical parameters, quantitative elemental analysis, including the percentage of arsenic using atomic absorption spectrometry. As analytical parameter shows very minimal difference in both type of *Shodhana*, so both type of *ManasheeladiVati* are analytically equal.

Keywords

ManasheeladiVati, Arsenic, Shodhana, Churnodaka

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INTRODUCTION

"ManasheeladiVati" is a combination of *Uprasa* and herbal medicines. When drug manufacturing is talked about or when a work is carried with regard to drug designing it has to follow good Rasashastra practice, which will be incomplete if suitable up to date advanced integrated instrumental and technological, analytical standardization work is not under taken. Hence in the present study manufactured drug is taken for its basic evaluation protocols.

In present study it was decided to compare physico-chemical changes in *ManasheeladiVati* prepared by two different methods of *shodhan* at intermediate and end stage of formulation.

AIM

Comparative Pharmaceutical and Analytical Study of *ManasheeladiVati* prepared from two different methods of *Manasheela Shodhan*.

OBJECTIVES

To identify and authentify raw materials and to carry out their *shodhan* required in preparation of *ManasheeladiVati.*

• To prepare *ManasheeladiVati* using *Aardrak Swaras shodhita Manasheela* and its standardization.

• To prepare *Manasheeladivati* using *Churnodaka shodhita Manasheela* and its standardization.

• Analytical testing of *ManasheeladiVati* prepared from two Different Methods of *Manasheela Shodhan.*

• To compare the analytical findings of *ManasheeladiVati* prepared from two methods of *Manasheela shodhan*.

MATERIALS AND METHODS

The study pertaining to the science art of conversion of raw drugs into a potent medicament by various classical processes is called Pharmaceutical study.

Aim: To prepare *ManasheeladiVati.*

Objectives:

• Collection of the raw drugs of *ManasheeladiVati*.

• Processing of raw drugs of *ManasheeladiVati.*

• Preparation of *ManasheeladiVati.*

Materials: *Manasheela, Kushta, Karanjbeej, Shirishbeej, Kumkum, Jal, ArdrakSwarasa, Churnodaka, Khalvayantra* etc.

Pharmaceutical Study and Observations:-

Pharmaceutical Study of *ManasheeladiVati* is designed in 4 Steps as below:

Step 1- Collection of Raw drugs used in the preparation of *ManasheeladiVati.*

Step 2- Preparation of *ArdrakSwarasa* and *Churnodaka.*

Step 3 - *Shodhana* of *Manasheela*.

Step 4 - Preparation of *ManasheeladiVati.*

ANALYTICAL STUDY

. Analytical tests are divided in 3 steps –

- Raw material study
- In process study
- Final product study
- **Raw material study-**

It includes *Ashuddha Manasheela, Kushtha, Karanjabeej, Shirishabeej* and *Kumkum.*

- *By Ayurvedic Method (Table1)*
- *By Modern Analytical Tools (Table2)*

Chromatographic analysis using thin layer chromatography-

- *Karanjabeej* – 0.19, 0.38.
- *Shirishabeej* – 0.09, 0.21.
- *Kushtha* - 0.21, 0.39, 0.50.

2. In Process Study

It includes *Ardrak swarasa Shodhita Manasheela, Churnodaka Shodhita Manasheela* (Table 3)

Table 2 Modern Parameters

3. Final Product Study-

It includes *Ardrak swarasa Shodhita Manasheeladi Vati, Churnodaka Shodhita Manasheeladi Vati.*

- *By Ayurvedic Method (Table 4)*
- *By Modern Analytical Tools (Table 5)*

Table 1 Organoleptic characters of all the ingredients

Sr. No.	Samples	Rupa	Rasa	Gandha
1	Ashuddha Manasheela	Reddish yellow	Katu, Tikta	Not specific
2	Kushtha	Dark Brown	Tikta, Katu, Madhura	Odourless
3	Karanjabeej	Slightly chocolaty	Tikta, Kashaya	Not specific
4	Shirishabeej	Slightly brownish grey	Kashaya, Tikta, Madhura	Not Specific
5	Kumkum	Slightly Reddish Orange	Katu, Tikta	Pleasant

DISCUSSION

Analysis of the drug is necessary to know the physico – chemical, macro and micro properties and to confirm the safety & efficacy of the drug.

Sr No	Para-meter	Kushta	Karanjbeej	Shirishabeej	Kumkum
1	Appear-ance	Dark brown colour	Slightly chocolaty color seed	Slightly brownish grey color	Slightly reddish orange petals
2	Odor/ Taste	Odorless/ tasteless	Indistinct/ Characterist-ics	Indistinct/ bitter	Pleasant/ slightly sweet
3	Moisture Content	6.13%	1.04%	0.32%	5.34%
4	pH	-	5.90	5.68	-
5	Ash Content	8.87%	2.86%	3.06%	6.38%
6	Acid Insoluble Ash	3.95%	<0.1%	0.14%	<0.1%
7	Water Soluble Extractive	5.32%	19.37%	14.39%	_
8	Alcohol Soluble Extractive	15.86%	24.18%	9.64%	_
9	Fat Content	_	_	_	4.98%
10	Fiber Content	_	_	_	6.34%
11	Protein Content	_	_	_	9.22%

Table 3 In process analysis

Sr. No.	Parameter	AshodhitaManasheela	ArdrakSwarasaShodhitaManasheela	ChurnodakaShodhitaManasheela
1	Moisture Content	0.14%	0.19%	0.22%
2	pH	7.01	7.00	6.94
3	Ash Content	6.29%	7.92%	8.10%
4	Acid Insoluble Ash	0.72%	0.40%	0.38%
5	Water soluble Ash	0.052%	0.067%	0.072%
6	Arsenic Content	61.86%	62.74%	62.90%
7	Sulphur Content	26.85%	28.12%	28.46%

Table 4 Organoleptic characters of all the ingredients

Characters	ArdrakSwarasaShodhitaManasheeladiVati	ChurnodakaShodhitaManasheeladiVati
Rupa	Slightly brown Creamy colour	Slightly brown Creamy colour
Rasa	Characteristic	Characteristic
Gandha	Astringent	Astringent

Table 5 Modern Parameters

Sr. No.	Parameter	ArdrakSwarasaShodhitaManasheeladiVati	ChurnodakaShodhitaManasheeladiVati
1	Appearance	Slightly brown Creamy colour	Slightly brown Creamy colour
2	Odor/Taste	Astringent/Characteristic	Astringent/Characteristic
3	Moisture Content	2.88%	2.64%
4	Ash Content	5.97%	6.09%
5	Acid Insoluble Ash	0.31%	0.33%
6	Arsenic Content	58.11%	57.86%
7	Sulphur Content	20.24%	19.97%
8	Average Diameter	0.650 cm	0.654 cm
9	Average Thickness	0.336 cm	0.290 cm
10	Average Weight	129.28 mg	129.33 mg
11	Friability	2.71%	2.94%
12	Hardness	<1kg/cm^2	<1kg/cm^2
13	Disintegration Time	2 min	2 min

Physicochemical analysis:

Raw material study –

The Arsenic percentage in *Manasheela* was 61.86%, Sulphur in *Manasheela* was 26.85% it means that the selected raw material was of good quality. The other ingredients were within normal limits. Above results shows that raw material selected was authentic.

In process study and Final product study:-

Ardrak Shodhita ManasheeladiVati was found to posses 2.88 %w/w and *Churnodaka Shodhita ManasheeladiVati* was 2.64% loss on drying at 110^{0}C. Hence it can be stated that *Churnodaka Shodhita ManasheeladiVati* possessed less moisture content than *Ardrak Swarasa Shodhita ManasheeladiVati.* So, has very rare chance of bacterial and fungal growth and also the drug is having least or nil hydroscopic activity and the drug deterioration chance or contaminations chances etc. are very less. The ingredient moisture content of crude is 0.14%, *Ardrak Swarasa Shodhita Manasheela* is 0.19% and *Churnodaka Shodhita Manasheela* is 0.22%. It means moisture content increases due to *bhavna dravya*.

The P^H of crude was 7.01, *Ardrak Shodhita Manasheela* was 7.00 and *Churnodaka Shodhita Manasheela* was 6.94. The P^H of

Karanjabeej was 5.90 & *Shirishabeej* was 5.68. Among the ingredients of *ManasheeladiVati* *Karanjabeej*, *Shirishabeej* were within the acidic range. The P^H of *Ashuddha Manasheela* is alkaline. For *Ardrak Swarasa Shodhita ManasheeladiVati* it is 5.97% and for *Churnodaka Shodhita ManasheeladiVati* it is 6.09% which indicate that this herbomineral preparation contains less amount of inorganic constituents and more amount of (94.03% and 93.91% respectively) of organic and bio human available particles. Hence it can be said that the prepared *ManasheeladiVati* along with its ingredients like *Kushtha*—8.49%, *Karanjabeej*—2.86%, *Shirishbeej*—3.06%, *Kumkum*—6.38%, are within the standard limits. Hence it can be said that *Shodhan* Converts inorganic constituent to organic and human acceptable form. The aim of *shodhan* is also completed. *Kushtha*—3.95%, *Karanjabeej*—<0.1%, *Shirishbeej*—0.14%, *Kumkum*—<0.1% are within the predetermined range.

The water soluble extractive of *Kushtha*—5.32%, *Karanjabeej*—19.37%, *Shirishbeej*—14.39%, in the present study, are also within the predetermined range.

The alcohol soluble extractive of *Kushtha*—15.86%, *Karanjabeej*—24.18%, *Shirishbeej*—9.64%, are also within the predetermined range.

Kushtha (RF value) - 0.21, 0.39, 0.50

Karanjabeej (RF value) - 0.19, 0.38

Shirishabeej (RF value) - 0.09, 0.21 are found to be within standards limits.

The total % of Arsenic in *Ashuddha Manasheela* was 61.86% and % of Sulphur was 26.85%, after *Shodhana* by *Ardrakswarasa* was 62.74% and 28.12%, by Churnodaka was 62.90% and 28.46% respectively. *Ardrak Swarasa Shodhita ManasheeladiVati* - 58.11% and 20.24%, *Churnodaka Shodhita ManasheeladiVati* - 57.86% and 19.97% which may be due to the larger part of organic form. These inorganic constituents might have metamorphosed with organic herbal constituents. Hence it can be said that shodhan reduces the conc. of As, S. Hence the chances of mineral metallic toxicity in *ManasheeladiVati* are negligible and also these two chemicals are processed in purified form.

CONCLUSION

- Percentage of Arsenic and Sulphur in *Shodhita Manasheela* is greater than

Ashodhit Manasheela due to removal of water soluble impurities.

- In *Shodhana* process, both *Ardrak Swarasa Shodhita Manasheela* and *Churnodaka Shodhita Manasheela* all the analytical parameters show very minimal difference.
- As there is decrease in Ash value, Acid insoluble ash and increase in % of Arsenic and Sulphur in *Ardrak Swarasa Shodhita ManasheeladiVati* but has very minimal difference hence it can be concluded that *ManasheeladiVati* prepared from both type of *shodhan* are analytically equal but there is difference in time requirement and economical affordability of both the process. Less time required for *shodhana* of *churnodaka shodhit Manasheeladivati* in process loss is minimum.

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