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A Pharmaceutico Analytical Study of Bhadravaha Ghrita

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ABSTRACT

Bhadravaha ghrita[1] was one such yoga explained in *Bhaishajya rtanavali* containing *drugs which are mutrala, rasayana properties which are* indicated in *Mutraghata chikitsa.*

- Preparation of *Bhadravaha ghrita.*
- Physico chemical analysis of *Bhadravaha ghrita.*

Methodology:

Pharmaceutical study: Encompasses the following details

Bhadravaha Ghrita:

1. Preparation of *Bhadravaha Ghrita* by method of preparation as mentioned specifically.

BG was prepared by *Murchita Ghrita- 1 part, kalka- ¼ part , kashaya-4 part by general snehapaka method.*

Method of preparation:

- *Ghritha murchana[2]* was done according to classical reference.
- *Bhadravaha ghrita* was prepared as mentioned in classsics.

Analytical study:

- Analytical study of *Bhadravaha ghrita* product was carried out by using *Ayurvedic* as well as Modern Analytical Parameters.

Discussion& conclusion:

- *Bhadravaha ghrita* was prepeared according to classical reference by using genuine raw drugs.
- Chemical analysis evidences the purity and safety of the formulation.

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KEYWORDS: *Bhadravaha ghrita, murchita ghrita*

INTRODUCTION

Sneha kalpana play an important role in the treatment aspects of *Ayurvedic* science. It is the process where the active principles of the drugs are transferred in to *sneha*. *Ghrita, Taila* or such other fatty substances are used here as base. This kalpana helps to obtain the extra benefits of the Ghrita or Taila used, helps to preserve the drugs for the longer time. *Sneha Kalpana* are considered to be the most potent formulations due to the high drug delivery system in the body. It also enhances the absorption of the drugs. Various *Ghritas* have been mentioned as medicine in many diseased conditions.

Kidneys are the major excretory organs. Which remove metabolic wastes through urine. Nephrotoxicity is one of the most common kidney disorders. Due to the over use of over the counter (OTC) medication, over use of certain medications. Which adversely affect the kidney resulting in acute renal failure (ARF). Other factors can also lead to ARF such as age, DM, HTN, liver disease. Drug induced nephrotoxicity is associated with acute renal damage as well as with chronic kidney disease (CKD).

Bhadravaha ghrita is a unique formulation which comes under snehakalpana. Which is one such classical, potent, unexplored herbo-mineral preparation contains *tikta rasa, ushna, tikshna, mutrala, rasayana* properties. It is indicated in *Mutraghata, Ashmari, Prameha*. These can be symptomatically co- related to disorders of urinary system in modern science.

METHODOLOGY

A. Shilajatu shodhana[3]

Ingredients

1. Ashuddha Shilajatu -500gm
2. Triphala kwatha – 250ml
3. Hot water – 1000ml

Procedure:

- Ashudha *Shilajatu* (500gm) was weighed and made into coarse powder in a clean khalva yantra.
- Took a clean and wide mouthed stainless steel vessel.
- Powdered Ashudha *shilajatu* was put into the vessel, to this 1ltr of warm *Triphala Kashaya* was added and stirred well.
- At the end 1 ltr of hot water was added and stirred well so that *shilajatu* gets dissolved in the liquid.
- The mixture was kept undisturbed in hot sunrays for 3hrs.
- After 3hrs the undisturbed mixture was macerated well and filtered. The external impurities like sand, mud, etc were filtered and the supernatant was kept in another vessel.
- Obtained this soild fitrate again added with some quantity of hot water and kept under sunlight.
- when the blackish creamy layer surfaces over the liquid, it was carefully skimmed off and transferred to next vessel.
- it was continued until the water in the vessel remains colourless.
- finally, the surfaced blackish creamy layer of *shilajatu* was skimmed off into a clean stainless steel tray.
- It was placed under strong sunlight, dried.

Observation

- The colour of supernant liquid was dark brown in colour
- The collected shuddha Shiljatu was sticky and pitch black in colour.
- The collected shilajatu was dried in shade to remove the left over moisture.

Precaution

- The transparent plastic sheet was place over the mouth of the vessel to avoid the fall of dust into it.
- The vessel was kept undisturbed before and during skimming off its creamy layer.

B. Bhallataka shodhana 1[4]

Procedure:

The *Bhallataka* (190gm) seed bases are carefully cut with a sharp instrument and are tied in a thick gunny bag with required quantity of 'fine brick powder'. The sack is now rubbed thoroughly from outside until the brick powder is soaked with the oil from *bhallataka* seeds. Later the seeds are washed with warm water, dried under hot sun, powdered and stored in suitable airtight container as *'shuddha bhallātaka'*.

Observation:

- Peeling of outer coating of *bhallataka.*
- Shining was reduced
- Oil was adhered to gloves during gharshana procedure
- Weight of *bhallataka* –154 gm

Precautions:

- Constant pressure was applied during gharshana.
- Brick powder should be in coarse powder form.
- Hand gloves were used to prevent blister formation.
- Apply coconut oil to the hands.

C. Bhallataka shodhana 2[5]

Coarse powder of *Bhallataka phala* is taken in cora cloth and made into *pottali*. A poṭṭali was tied and hung in doläyantra containing freshly collected tender coconut water as liquid media.

The process of swedana was carried out by placing 'dolāyantra' over mild fire for 3 hours. Later the seeds were taken out, washed with warm water and dried in shade and preserved in air tight container.

Precautions:

- Hand gloves were used to prevent blister formation.
- Wear mask to avoid fumes.
- Obtained quantity- 115gm

D. Bhadravaha ghrita

Reference: Bhaishajya ratnavali mutrarogadhikara

Equipments: Ulukhala yantra, Weighing machine, ladle, collecting vessel, wide mouthed vessel, filtering cloth, Gas stove

Preparation of Bhadravaha ghrita

Sl. No	Drug Name	Quantity
•	*Patha*	*110gm*
•	*Patala*	*110gm*
•	*Shweta punarnava*	*110gm*
•	*Rakta punarnava*	*110gm*
•	*Kusha*	*110gm*
•	*Kasha*	*110gm*
•	*Shara*	*110gm*
•	*Shali*	*110gm*
•	*Varahi*	*110gm*
•	*Vidari*	*110gm*
•	*Gokshura*	*110gm*
•	*Murva*	*110gm*
•	*Pashanabheda*	*110gm*
•	*Shodhita bhallataka*	*110gm*
•	*Shirsha mula*	*110gm*
•	*Shodhita shilajatu*	*28.5gm*
•	*Trapusha*	*28.5gm*
•	*Kushmanda*	*28.5gm*
•	*Ervaru*	*28.5gm*
•	*Nilotpala*	*28.5gm*
•	*Ashwagandha*	*28.5gm*
•	*Yashtimadhu*	*28.5gm*

Kashaya preparation

- Took stainless steel vessel and add yavakuta churna of Patha, Patala, Shweta and Rakta punarnava, Vidari, Varahi, Pashanabheda, Kusha, Kasha, Shara, Shali, Gokshura, Murva, *Shodhita Bhallataka*, Shirisha ingredients 110gm each.
- Add the 13.2 ltr of water and heated on mandagni.
- Reduced to ¼th quantity and filtered.

Preparation of kalka for BG

- Kalka prepared by using drugs Shodhita Shilajatu, seeds of Ervaru, Trapusha, Kushmanda, Ashwagandha, Yashtimadhu, Nilotpala (28.5gm each) adding little quantity water

Bhadravaha ghrita

- A clean and wide mouthed stainless steel was taken.
- Prepare the kwatha of kwatha dravyas reduced to quarter by boiling.
- *Murchita Ghrita* was added and kept on *mandagni*.
- Once *Ghrita* gets heated *kalka* was added slowly with continuous stirring, next to this kashaya was added and stirred well.
- Heating was carried out in *mandagni* (around 80-100^{0}c).
- The boiling was continued till the *sneha siddhi lakshanas* observed.
- On cooling, it should be filtered and stored in wide mouth glass bottles.

Dose – 1 pala

Anupana – warm water, warm milk Indication – Ushnavata, Mutraghata, Ashmari

RESULTS

Pharmaceutical Results:

A. Ghritamurchana

Table no 1: Showing Results of MG

Quantity of *Goghrita*	1000 Ml
Observations	All *Siddhi lakshanas* observed.
Yield	900 Ml
Color	Yellow
Yield	90%

B. Shilajatu shodhana

Table no 2: Showing Ingredients and Quantity taken for *Shilajatu shodhana*

Ingredient	Quantity
shilajatu	500gm
Triphala kashaya	250ml
Warm water	1000ml

Table no 3: Showing Result of *Shilajatu shodhana*

Quantity of shilajatu	500gm
Observations	It took 1 month
Yield	100gm
Color	Black
Yield %	20%

C. Bhallataka shodhana 1

Table no 4: Ingredients and Quantity taken for *Bhallatak shodhana* 1

Ingredient	Quantity
Bhallatka	190gm
Ishtika churna	Quantity sufficient

Table no 5: Showing Result of *Bhallataka shodhana1*

Quantity of *Bhallataka*	190gm
Observations	Peeling of outer cover
Yield	154gm
Color	Black
Yield %	81%

D. Bhallataka shodhana 2

Table no 6: Ingredients and Quantity taken for *bhallatak shodhana* 2

Ingredient	Quantity
Bhallatka	154gm
Narikela jala	3000ml

Table no 7: Showing Result of *Bhallataka shodhana* 2

Quantity of *Bhallataka*	154gm
Observations	Oil content was reduced
Yield	110gm
Color	Black
Yield %	71%

E. Showing Results of BG

Table no 8: Ingredients and Quantity taken for BG

Ingredient	Quantity
MurchitaGhrita	800 ml
Kalka dravya	200gm
Kashaya	3200 ml

Table no 9: Showing Result of BG

Quantity of BG	800 Ml
Observations	All *Siddhi lakshanas* observed.
Yield	700 ml
Color	Yellowish-Brown
Yield %	90%

ANALYTICAL STUDY RESULTS OF BG

Table no. 10: Showing Classical Parameters for Analysis of MG, BG

TEST	OBSERVATION	
	MG	BG
Varna	Yellowish	Yellowish brown
Gandha	Characteristic odour	Gomutra
Rasa	Tikta	Tikta
Kalka vartivatlakshana	+++	+++
Shabdahina when put on agni	+++	+++
Phenashanti	+++	+++

MODERN PARAMETERS

A. ORGANOLEPTIC CHARACTERS: Color, odour, taste of the given sample was tested using sensory organs, and the same were noted.

Table no 11: Showing organoleptic characters of MG, BG

Physical test	MG	BG
Colour	Yellow	Yellowish brown
Odour	Characteristic	Characteristic
Taste	Astringent, slightly bitter	Buttery, bitter
Texture	Grainy greasy	Grainy greasy

B. PHYSICO-CHEMICAL PARAMETERS

Table no 12: Showing Results of Standardization parameters

Parameter	*Results n = 3 %w/w*
	BG
Loss on Drying at 105°C	0.52%
Saponification value	190.74
Iodine value	10.78
Acid value	2.80
Peroxide value	3.2
Ester value	187.935
Refractive index	1.471
Specific gravity	0.9144
Viscosity (cP)	39.32
Rancidity test (Kreis test)	Negative

C. TOTAL MICROBIAL COUNT:

Table no 13:Showing results of Total bacterial count of MG, BG

SL no.	BG
Total bacterial count	5 CFU (limit<10 CFU/ML)

Results: There is no growth of bacterial colonies in the sample MG,BG.

Table no.14:showing results of total fungal count of MG,BG

SL no.	BG
Total Fungal count	6 CFU (limit<10 CFU/ML)

Results: There is no growth of fungal colonies in the sample MG, BG.

THIN LAYER CHROMATOGRAPHY:

Table No 15: Showing results of TLC – Under Visible light

	BG
Under white light	0.5
Under short UV (254nm)	0.5
Under Long UV(365nm)	0.237
	0.5
	0.687
	0.862

HPTLC

Table No.16: Showing results of HPTLC of BG

Short UV	Long UV	After derivatisation
-	-	0.07(purple)
0.13(Green)	-	0.13(purple)
-	-	0.31(purple)
-	-	0.37(purple)
-	-	0.44(purple)
-	0.51(F.blue)	-
0.60(Green)	0.57(F.blue)	0.58(purple)
-	0.75(F.blue)	-
-	-	0.88(purple)
-	0.90(F.blue)	-

DISCUSSION

Bhadravaha ghrita prepared by using 15 kashaya dravyas and 8 kalka dravyas. The procedure was followed by general method of preparation. **Bhadravaha** ghrita is a unique formulation of bhaishajya kalpana mentioned in Bhaishajya ratnavali which is indicated in Mutraghata, Ashmari, Ushnavata.

Loss on Drying

In the present study **MG,BG** possesses 0.23%, 0.52% respectively. It can be stated that all have less amount of moisture content and very rare chance of bacterial and fungal growth.

Saponification Value:

Saponification is an indication of the molecular weight of the fat or oils.

The saponification value **BG** is 190.74. Long-chain fatty acids found in fat have low saponification value and vice versa. Short chain fatty acids are readily absorbed than long- chain fatty acids.

Iodine Value:

Iodine value increased gradually from **MG** to **BG** 3.172 to 10.78 respectively. This indicates that there is increase in the degree of unsaturation But it increased in BG 10.78 but within normal limits.

Acid Value:

Acid value indicates the amount of free fatty acids present in the fat. It is used to indicate the rancid state. Acid value of **BG** is 2.80,this shows the reduced chance of rancidity after preparing thus ultimately it leads to increased shelf life and reducing the toxic properties of sneha.

Peroxide Value:

Peroxide value is the range that denotes the rancidity of the Sneha. Peroxide values of **BG** is 3.2 indicates that they are free from rancidity.

Ester value:

Esters are the fatty acids with glycerol. As the esters are increased, rancidity chance is decreased. The ester value of **BG** is 187.93. As the esters are increased, rancidity chance is decreased. Ester value of **BG** is increased after *sneha paka* process indicating the fewer chances of rancidity and thus possesses increased shelf life.

Rancidity

The samples have shown no rancidity, which shows the presence of tocopherols as natural antioxidant.

Refractive Index

It is the angle of refraction of light travelled through the media. The refractive index of **BG** is 1.471. Which reveals that some active substances of ingredients used in the process were incorporated into Sneha kalpana.

Specific gravity:

Specific gravity of **MG, BG** is 0.91, 0.9144 respectively. Specific gravity indicates addition of some bio constituents from the drugs used during sneha kalpana. It may be due to solid extractives that come from the herbals.

Microbial count:

Total Bacterial count and Total Fungal count is within limit. This may be due to least moisture content in the sample and proper storage of the drug in an air tight container.

HPTLC:

HPTLC of BG was done. The 8 peaks in densitometric scan at 254nm and 5 peaks in 366nm and 7 peaks in 560nm are due to the influence of phytochemical constituents present in the compound.

CONCLUSION

Bhadravaha ghrita is the formulation which comes under sneha kalpana. It is a herbo mineral preparation contains tikta, kashaya rasa, sheeta virya, laghu, snigdha guna, mutrala, rasayana properties. It is indicated in Mutraghata, Ashmari, Prameha. Ghrita murchana was done and the yield obtained was 90%. *Bhadravaha ghrita* total quantity prepared was 700ml. It was prepared by using *shodhita shilajatu*, *Yashtimadhu, seeds of kushmanda, ervaru, trapusha, ashwagandha, nilotpala* each 28.5gm kashaya - 3200ml and *sneha dravaya* used was *murchita ghrita*– 800ml for the preparation and yield is 90%. HPTLC of BG was done. The 8 peaks in densitometric scan at 254nm and 5 peaks in 366nm and 7 peaks in 560nm are due to the influence of phytochemical constituents present in the compound.

Fig: 1

Ashuddha shilajatu

Fig: 2

triphala kashaya

Fig: 3

hot water

Fig: 4

Homogenous mixture of Shilajatu

Fig: 5

after 3hr kept under sunlight

Fig: 6

Shilajatu kept under sunlight(day 1)

Fig: 7

Day 7

Fig: 8

Day 10

Fig: 9

Day 115

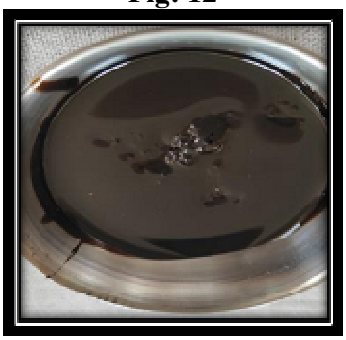
Fig: 10

Day 25

Fig: 11

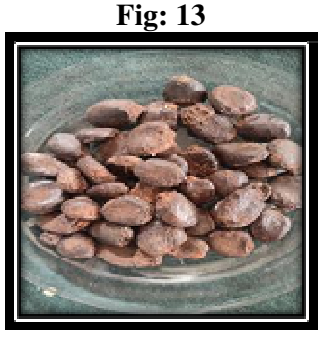
Day 30

Fig: 12



Shuddha Shilajatu

Fig: 13

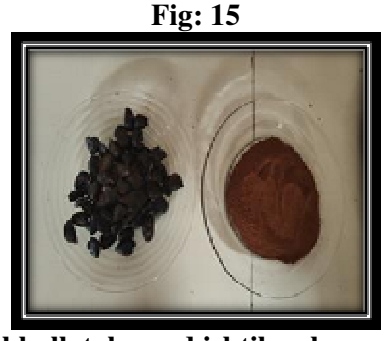


Ashuddha Bhallataka

Fig: 14

Grahya Bhallataka

Fig: 15



bhallataka and ishtika churna

Fig: 16

Ishtika churna and Bhallataka

Fig: 17

Gharshana

Fig: 18

Gharshita Bhallataka

Fig: 19

Bhallataka

Fig: 20

Bhallataka swedana in narikela jala

Fig: 21

Swedita Bhallataka

Fig: 22

Kashaya Dravya

Fig: 23

kashaya preparation

Fig: 24

kalka dravyas

Fig: 25

Kalka

Fig: 26

Murchita ghrita

Fig: 27

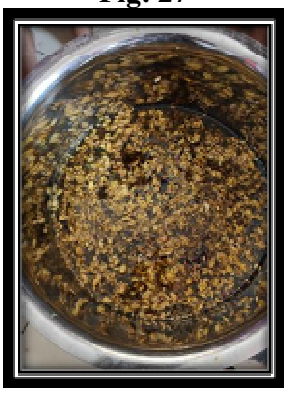


Fig: 28

Adding Kashaya

Fig: 29

Snehapaka

Fig: 30

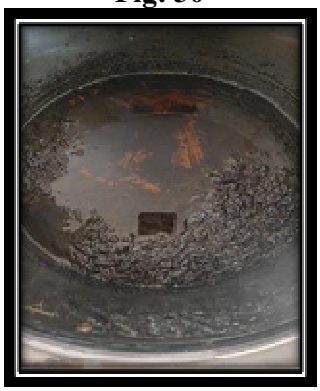


Fig: 31

Varti Lashana

Fig: 32

Shabdahina agni nikshita

Fig: 33

Filteration

Fig: 34

Bhadravaha ghrita

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