

COMPARATIVE PHARMACEUTICO-ANALYTICAL STUDY OF SELF PREPARED *BOLA PARPATI* AND MARKET SAMPLE OF *BOLAPARPATI*

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ABSTRACT

Introduction: *Parpati* means thin flakes. It is first described in 8th century by *Acharya Nagarjuna* in *kushtaroga* for external use. But later in 11th century *Acharya Chakrapani* (commentator of *Charaksamhita*) described *parpati kalpana* in *Grahani chikitsa* for internal use. Now a day's *raktapradara*, *raktaguda*, *raktarsha* diseases are common health problems and sometimes ignorance towards these disorders causes life threatening effects. Effective choices are available for the treatment of these common disorders but it is a need to be more potent and cost effective formulations which show fast results and more therapeutic effect. In Ayurveda acharya mentioned various effective drugs on above diseases such as *bolabaddha rasa*, *bola churna*, *bola parpati* etc. The *bola parpati* contains *kajjali* and *bola* having the properties of constricts the blood vessels and leads to coagulation which helps to stop bleeding and *kajjali* act as catalyst which enhances the properties of *bola*. Demand of ayurvedic medicine is increasing day by day. So, it is necessary to provide potent medicine with quality assured by *rasagrantha*. *Rasashastra* has mentioned organoleptic tests and *kalpasiddhi lakshana* for every formulation. *Siddhi lakshana* of *parpati Kalpana* and its organoleptic tests are also mentioned in text. Few ayurvedic pharmacies prepare *bola parpati*. Before sample being available in market, pharma companies do analysis for quality assurance. Neither this analysis is exposed to anyone nor it printed on sample. Therefore, we choose to compare our preparation with market sample to establish some analytical parameters for *bola parpati* which will be useful for further studies.

Aim: To compare the pharmaceutico-analytical properties of self-prepared *bola parpati* with market sample. **Material and Methods:** *Parada shodhana* was done according to *Rasatarangini* and *Gandhaka shodhana* was done according to *Ayurved Prakash*. *Kajjali* was prepared from *Shodhit parada* and *Shodhit gandhaka*. *Bola parpati* was prepared according to *Yogaratamakara*. The prepared *Bola parpati* was then subjected to analytical tests alongwith the market sample of *Bola parpati*. The pharmaceutico-analytical properties of self-prepared *Bola parpati* and market sample were compared to draw the conclusions. **Observations:** The pharmaceutical observations during *Parada shodhana*, *Gandhaka shodhana* and *bola parpati* preparation were noted. Also, the analytical observations of both self-prepared and market sample of *Bola parpati* were noted and compared. **Conclusions:** The results showed a slight difference in the pharmaceutico-analytical properties of self-prepared and market samples of *Bola parpati*. There is however a need of Pre-clinical and clinical studies of *Bola parpati* to study its efficacy.

KEYWORDS: *Parpati*, *Bola parpati*, Self-prepared and market samples of *Bola*

INTRODUCTION

Rasashastra is a pharmaceutical branch of *Ayurveda* which deals with processing of different herbo-mineral

compounds. *Rasaushadhis* divided into four types according to their preparation method.^[3]

1. *Kharaliya rasayana*- prepared in *khalvayantra*
2. *Parpati Kalpana*- prepared in thin flakes form on

cow dung platform.

3. *Pottali rasayana*- prepared by keeping in *pottali* of cloths
4. *Kupi pakva rasayana*- prepared in bottles i.e. *kupi*

Parpati means thin flakes. It is first described in 8th century by *Acharya Nagarjuna* in *kushtaroga* for external use. But later in 11th century *Acharya Chakrapani* (commentator of *Charaksamhita*) described *parpati kalpana* in *Grahani chikitsa* for internal use. First time started the use of amalgamation of metals with herbo-mineral medicines.

According to *rasaratnasamucchaya*, *kajjali* is melted and pressed on *kadali patra* to form thin, flat wafer like structure called *parpati*. Purified Mercury and sulphur are main contents of *parpati*, later some ingredients were added in formulation to form different formulations of *parpati*. For example:

1. With mercury and sulphur- *rasa parpati*
2. With mercury+ sulphur and another ingredient- *bola parpati*, *tamraparpati*
3. Without mercury- *sheetal parpati*
4. Without mercury and sulphur- *Shweta parpati*.

Now a day's *raktapradara*, *raktaguda*, *raktarsha* diseases are common health problems and sometimes ignorance towards these disorders causes life threatening effects. Effective choices are available for the treatment of these common disorders but it is a need to be more potent and cost effective formulations which show fast results and more therapeutic effect. In Ayurveda acharya mentioned various effective drugs on above diseases such as *bolabaddha rasa*, *bola churna*, *bola parpati* etc. The *bola parpati* contains *kajjali* and *bola* having the properties of constricts the blood vessels and leads to coagulation which helps to stop bleeding and *kajjali* act as catalyst which enhances the properties of *bola*.

Now days *Ayurveda* gaining its importance and people started looking towards *Ayurveda* for better results. According to data, ayurvedic medicine sector is expanding 20% annually. Demand of ayurvedic medicine is increasing day by day. So, it is necessary to provide potent medicine with quality assured by *rasagrantha*. *Rasashastra* has mentioned organoleptic tests and *kalpasiddhi lakshana* for every formulation. *Siddhi lakshana* of *parpatiKalpana* and its organoleptic tests are also mentioned in text. Few ayurvedic pharmacies prepare *bola parpati*. Before sample being available in market, pharma companies do analysis for quality assurance. Neither this analysis is exposed to anyone nor it printed on sample. Therefore, we choose to compare our preparation with market sample to establish some analytical parameters for *bola parpati* which will be useful for further studies.

I. AIMS: To compare the pharmaceutico-analytical properties of self- prepared *bola parpati* with market

sample.

2. OBJECTIVES

1. To study pharmaceutico-analytical properties of self-prepared *bolaparpati*.
2. To study pharmaceutico-analytical properties of available market sample of *bolaparpati*.
3. To compare pharmaceutico- analytical properties of self-prepared *bolaparpati* andmarket sample.

1. MATERIAL AND METHODS

4.1.1. Parada Shodhana^[1]

1. **Reference:** R.T. 5/31
2. **Date of Starting:** 11/2/2019
3. **Date of Completion:** 20/2/2019
4. **Apparatus**

Khalva yantra, Steel vessels, Spatula, Cloth, etc.

5. Materials

a) Ist Step

1. *Asuddha Parada*: 250 gm
2. *Sudha* (Lime powder): 250gm

b) IInd Step

1. *Ashuddha parada*: 230 gm
2. *Lasuna*: 230gm
3. *Saindhava Lavana*: 115gm
4. Hot water : 500ml

4. Procedure

- A. *Parada shodhana* done according to *rasatarangini* in two steps. In first stage *Ashuddha parada* and same amount of *sudha* (lime powder) was taken in *khalvayantra*. This mixture was triturated for about 36 hours. The *mardana* was done for 4 hrs daily. Then, mixture was taken in cloth and filtered through it. The obtained *parada* used for next for procedure of *shodhana*.
- B. In second stage remaining *ashuddha parada* was taken in *khalvayantra* along with same quantity of *lashuna* paste and half quantity of *saindhava churna*. This mixture was triturated until the *lashuna* paste becomes *krushnavarni* (blackish). After *mardana* whole mixture washed with Luke-warm water and filtered through cotton cloth. After washing *parada* was collected in Petri dish.

5. Precautions

- To avoid spilling of *parada* particles during *mardana* *Khalvayantra* should of large size.
- *Mardana* should be done carefully because small *Parada* particles may spill out of *Khalva yantra*.
- During washing of the *lashuna* paste with hot water should be done carefully because small *Parada* particles will be lost in *Jalagati* and *Malagati* manner.
- During washing of *lashuna* paste with water the mixture should be left untouched for some time so that *parada* particles settled at bottom.

6. Cause of weight loss

1. Procedural loss
2. Impurities removed during *Shodhana*.
3. Spilling of Parada particles during *Mardana* process.
4. During washing with hot water, small *parada* particles may spill out.

4.1.2. Gandhaka Shodhana^[2]

1. **Reference:** Ayurved Prakash 2/20

2. **Date of starting:** 20/2/19

3. **Date of completion:** 26/2/19

4. Apparatus

Khalvayantra, Aluminium pan, steel vessels, gas stove, cloth, spatula, etc.

5. Materials

1. *Asuddha Gandhaka*: 300gm
2. *Dugdha*: 1 litre
3. *Ghrta*: 25ml

6. Procedure

- Firstly, *dugdha* was taken in steel vessel up to 1/3 of its capacity and *madagni* was given. After that mouth of steel vessel was covered with thin cloth and was tied properly.
- *Ashuddha Gandhaka* was taken and powdered through sieve and collected.
- *Ghrta* was taken in stainless steel vessel and *mandagni* was applied (max 120 ° c) till *ghrita* melted completely. After that *ashuddha gandhaka* was added and allowed for complete melting.
- When *Gandhaka* was completely melted, it was poured into *dugdha* through the cloth.
- *Gandhaka* was allowed to cool in *dugdha*.
- After cooling *Gandhaka* was taken out in tray and washed out it by hot water and allowed to dry it.
- The same procedure was repeated two more times. Each time fresh *dugdha* was used for *Dhalana* process.
- *Gandhaka* was washed carefully with hot water and allowed to dry in open air at room temperature.
- After drying it was preserved in air tight glass jar.
- *Shodhana* was done three time.

7. Precautions

- For each *shodhana* fresh *dugdha* should be taken.
- The quantity of *dugdha* taken for every *Dhalana* should be enough for the complete immersion of *Gandhaka churna*.
- The cloth material should be thin as mentioned by acharya i.e. *tanuvastra*.
- *Dhalana* should be fast as the melted *gandhaka* turns solid rapidly.
- Heating of *Gandhaka* should be done on *Mandagni*.
- When *Gandhaka* melt completely and homogenous mixture is formed it must be immediately poured into *dugdha* vessels with proper precautions.
- After *dhalana Gandhaka* should be washed with hot water, dried and powdered.

- *Dugdha* should be hot while pouring molten *Gandhaka*.
- After completion of *Shodhana*, *Gandhaka* should be washed thoroughly with hot water and allowed it to dry completely to avoid *ghrita* smell.

8. Cause for weight loss

- Procedural loss
- Depend upon impurity present in *gandhaka*. More the impurity more the loss.
- Some particles of *Gandhaka* remains adherent to cloth and vessel.
- While washing, small particles of *Gandhaka* flow along with water.

4.1.3. Bola Nirmalakarana

1. **Date of starting:** 5/3/2019

2. **Date of completion:** 9/3/2019

3. **Apparatus:** stainless steel vessel, cloth, gas burner, spatula, tray, stirrer etc.

4. Materials

- *Ashuddha bola*: 500 gm
- Jal (tap water): 1litre

5. Procedure

- Firstly, *apadravya* in *bola* was removed then taken in dish and weighted accurately.
- Stainless steel vessel was taken with water up to is 1/3rd capacity and heated up to 70^o c.
- Then *ashuddha bola* was added to water and stirred it well until *bola* gets dissolved completely. Before filtration of prepared solution of *ashuddha bola* by cotton cloth, it was heated little and filtered, after filtration the residue in cloth was discarded.
- Now the filtered liquid was heated on gas stove on *mandagni* with continuous stirring.
- As water get evaporated its consistency increased gradually.
- When it converted to soft semisolid mass was transferred in a small vessel.
- This mass was dried in sun light and then pounded with a pestle in a stone mortar to form powder of *Shudha bola*.

6. Precautions

- *Ashudha bol* should pass all the criteria's of *grahyabola*.
- *bola* should be broken in small pieces before *shodhana* which reduced the time required for *shodhana* as in less time maximum *bola* were filtered through cloth.
- *Mandagni should be given*, as if *trivragni* given *bola* get burned.

7. Causes of wt. loss

- Procedural loss
- Physical impurities like sand, stones bark of a plant etc.
- Some *bola* sticks to the cloth as it is sticky in nature.

4.1.4. Kajjali Nirmana (Kajjali preparation)

1. **Reference:** R.R.S. 8/5
2. **Date of starting:** 11/3/19
3. **Date of completion:** 30/3/19
4. **Apparatus:** *Khalva Yantra*, steel plate, spatula etc.
5. **Materials**
 - *Samanya Sodhita Parada*: 200 gm
 - *Suddha Gandhaka*: 200 gm
6. **Procedure**
 - a. In a *Khalvayantra*, *shodhita parada* and *Suddha gandhaka* was taken in 1:1 proportion and trituration were started.
 - b. Then with progressing trituration gradually the yellow colour of *gandhaka* started to change, disappeared and a black powder was formed called *Kajjali* (fine, smooth, lustreless powder)
 - c. Trituration was continued till the powder became black in colour and very fine like
 - d. *Kajjala* and it fulfilled all the criteria of *Kajjali Nishchandratva*.
7. **Precautions**
 - For *Kajjali* preparation, *shuddha Gandhaka* should always be taken in fine powder form.

2. Duration**Table 1: Showing duration of preparation of bola parpati.**

Sr. No.	Sample	Date of Commencement	Date of completion
1.	BP 1	2-4-2019	2-4-2019
2.	BP 2	3-4-2019	3-4-2019
3.	BP 3	4-4-2019	4-4-2019

3. **Apparatus:** *Sharava*, steel plate, spatula, beaker etc.
4. **Materials**
 1. *Kajjali*: 50gm for each batch
 2. *Bola churna*: 50gm for each batch
 3. *Kadali patra*: 2
 4. *Ghrita*: 5ml
 5. *Dugdha*: q.s.
5. **Procedure**
 - a. Firstly, *sharava* was dried on gas burner. Then *kajjali* was taken in *sharava* and *mandagni* was given.
 - b. The *kadali patra* was taken and *ghrita* was applied over it.
 - c. Same amount of *Bola churna* was mixed in *dugdha*, and bolus was prepared carefully.
 - d. Later on, when *Kajjali* started melting some amount of *ghrita* was smeared over it. Then bolus of *bola churna* was added. This bolus was properly mixed in *kajjali* with spoon.
 - e. After achieving uniform mixing of *kajjali* and *bola churna*, the mixture was immediately transferred to clean *kadali patra*. then covered with another leaf.
 - f. When kat- kat sound of *parpati* was heard pressing

- Trituration should be done slowly & cautiously, to check the loss of *Parada*.
- Few drops of water should be sprinkled over *Kajjali* to check its spilling during trituration.
- *Khalva* should be kept covered when the process is not in progress.

Khalva should be of such size that there should be enough space for trituration so that particle not spill out.

- *Drudha Mardana* should be done.
- *Khalva yantra* should be covered by paper from surrounding to avoid spilling.

8. Cause of weight loss

- Spilling of mixture during trituration.
- Some fine particles of *Kajjali* remained adherent to *Khalva* which were difficult to collect.
- Some quantity of *Kajjali* was lost during performing the confirmatory test of the product.

4.1.5. BOLA PARPATI NIRMANA^[3]**1. Reference**

Yogratnakara raktapitta adhyaya.

- g. This mixture was pressed gently with hand and allowed it to cool.
 - h. When it cools the covered leaf was taken away. The *parpati* was kept as it is for drying.
6. **Precautions**
 - For *parpati* preparation, *shuddha bola churna* should always be taken in fine powder form.
 - *Bola churna* should be sieved through sieve no 100.
 - Before the procedure *sharava* should be dried on *mandagni*.
 - *Ghrita* should be added during melting of *kajjali*. After the mixture taken on *kadali patra* should be covered with another *patra* and should be pressed gently.
 7. **Cause of weight loss**
 - Some fine particles of melted *Kajjali* remained adherent to *sharava* which were difficult to collect.
 - Some quantity of *Kajjali* was lost during performing the confirmatory test of the product.

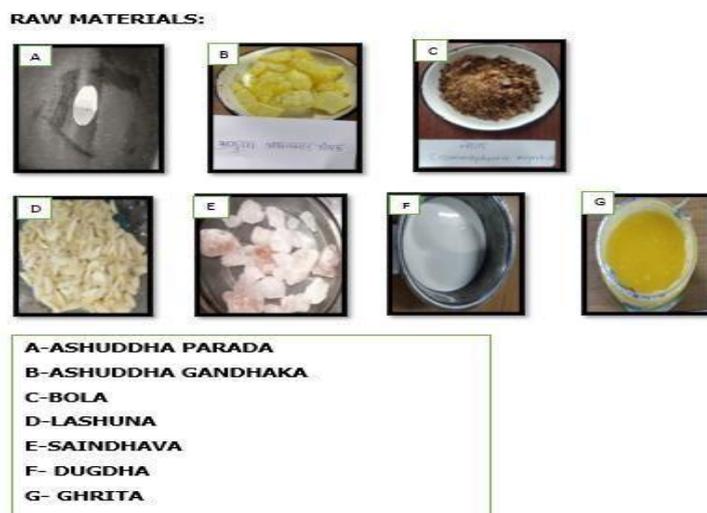


Figure 1: Raw Materials.



Figure 2: Parada Shodhana.



Figure 3: Gandhaka Shodhana.

BOLA NIRMALIKARANA:

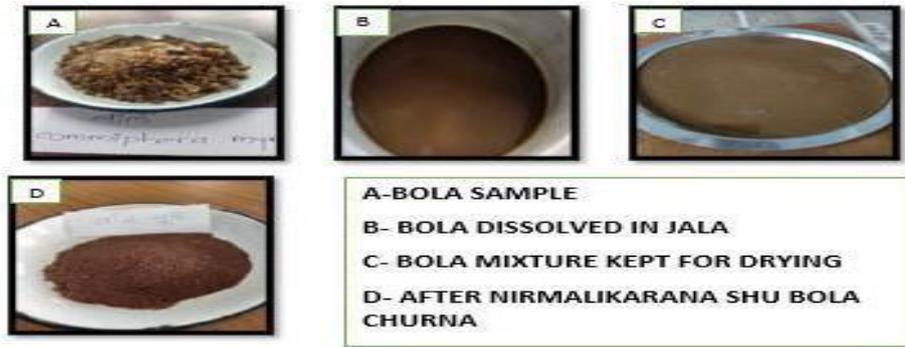


Figure 4: Bola Nirmalikaarana.

KAJJALI NIRMANA:



Figure 5: Kajjali Nirmana.

BOLA PARPATI NIRMANA:

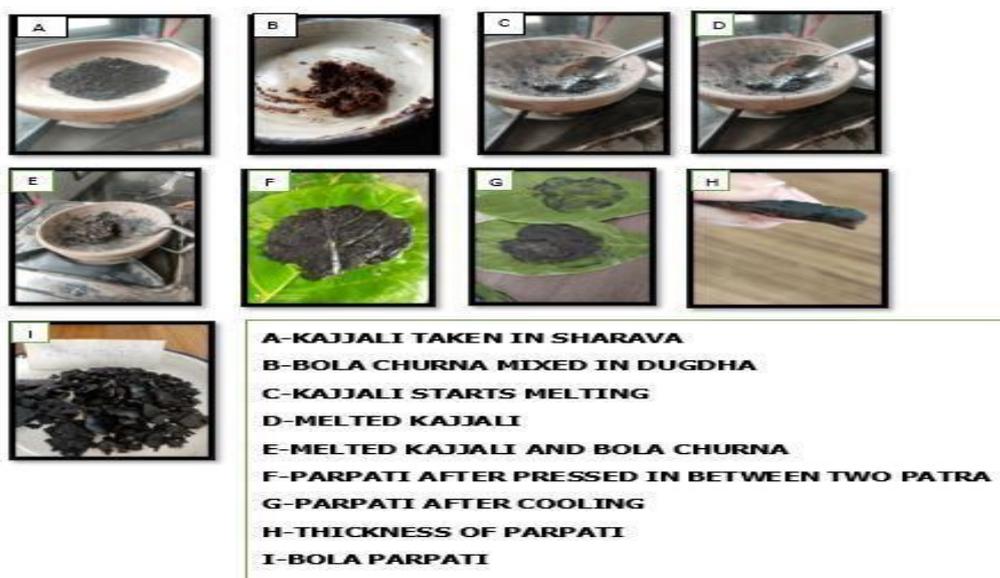


Figure 6: Bola Parpati Nirmana.

5. OBSERVATIONS AND RESULTS

5.1. Pharmaceutical Study

5.1.1 Parada shodhana Observations

- After one hour of trituration *parada* in *Khalvayantra* started disintegrating into small globules and started to mix up with *sudha* (lime powder).
- When *sudha* was triturated with *parada* for nearly 5 hours, the *sudha* turned to light grey colour.
- After triturating for 36 hours the mixture of *sudha* turned to dark grey colour and no free *parada* globules were seen in the mixture.
- When the trituration was over, mixture of *parada* and *sudha* was filtered through with cloth and

collected in dish.

- When *parada* was triturated along with *lashuna* paste and *saindhavalavana* after 30 minute the *parada* started disintegrating into tiny globules and paste turned to greenish black colour.
- After 3 hours of trituration, the paste turned into black colour and *Parada* in small globules form completely mixed with the paste.
- On washing, this paste with hot water, *parada* globules started mixing with each other and regained its original state.

Table 2: Showing observations during *parada shodhana*.

Sr no.	Details	Results
1	No. of days for <i>shodhana</i> process	10 days
2	Total time taken for <i>mardana</i> With <i>Sudha</i>	36 hrs (Daily 4hr <i>mardana</i> =9days)
3	Total time taken for <i>mardana</i> With <i>Lasuna</i> + <i>SaindhavaLavana</i>	3hrs
4	<i>Asuddha Parada</i> taken	250 gm
5	<i>Sodhita Parada</i> obtained	200 gm
6	Weight loss	50 gm
7	Appearance of <i>Parada</i>	Liquid and Shiny
8	Colour	Silvery White

5.1.2. Observations during *Gandhaka Shodhana*

Table 3: Showing observations during *Gandhaka Shodhana*.

Sr. No.	Details	Results
1	Quantity of <i>Ashuddha Gandhaka</i>	300 gm
2	<i>Gandhaka</i> started melting at	115°C
3	Average time taken to melt <i>Gandhaka</i>	5 min
4	<i>Shuddha Gandhaka</i> after three <i>Dhalanas</i>	224gm
5	Total loss	76gm
6	No. of days Requires for <i>shodhana</i> process	7 days

Observations

- During heating, *ashuddha gandhaka* started melting at nearly about 115°C.
- When *gandhaka* was totally melted it forms a homogenous mixture.
- When *gandhaka* was totally melted layer of *ghrita* formed above it.
- Then melted *gandhaka* poured in a vessel containing *dugdha*, some physical impurities like stones, thread, hair mixed pieces were observed on the cloth and colour of purified *gandhaka* was Whitish yellow.
- Purified *gandhaka* was collected in crystal and granular form from the *dugdha*.
- *Dugdha* was found hot after the dipping of melted *gandhaka* to it.
- On washing *gandhaka* collected from *dugdha* the colour of water turns to whitish colour.
- *Gandhaka* smell has gone completely.
- Average time taken to melt *gandhaka* was 5 min for each procedure.

- Crystalline dark yellow *gandhaka* turned into granular and bright Yellow after *shodhana*.
- Typical smell of *gandhaka* was felt throughout the process.
- During pouring of *gandhaka* above the cloth solidified rapidly.
- To avoid solidification of *gandhaka* continue stirring of hot spoon was done.

5.1.3 Observations during bola nirmalakarana

Table 4: Showing observations in bola nirmalakarana.

Sr. No.	Details	Results
1	Quantity of <i>ashuddha bola</i>	500 gm
2	Quantity of <i>shuddha bola</i> obtained	408gm
3	No of days taken for <i>nirmalakarana</i> process	5days
4	Weight loss during procedure	92 gm

Observations

- The colour of *ashuddha bola* was brownish having specific aromatic smell.
- After dissolving *bola* in *jala* the colour of the solution became reddish brown.
- After 15 min almost all *bolagets* dissolved and the solution became sticky.
- When *bola* dissolved completely the solution filtered through cloth.
- When solution filtered through cloth large amount of wood bark, sand particles remained on cloth.
- Filtered solution kept on *mandagni*.
- During heating little aromatic smell of *bola* was found.
- Gradually consistency was increased and colour darkened to brownish black. *bola* was quite sticky during handling.
- After drying, *bola* became lustreless powder.

5.1.4 Observations during kajjali nirmana

Table 5: Showing observations during kajjali nirmana.

Sr. No.	Details	Results
1	Quantity of <i>shuddha parada</i>	200 gm
2	Quantity of <i>shuddha gandhaka</i>	200gm
3	No of days taken <i>kajjali nirmana</i>	20 days (daily 6 hr <i>mardana</i>)
4	Weight of <i>kajjali</i> obtained	390gm
5	Weight loss during procedure	10gm

Observations

- After 1 hr of trituration of *shuddha parada* and *shuddhagandhaka*, the yellowish colour of *gandhaka* started to turn greyish.
- After 12 hours of trituration, the colour of *Gandhaka* started transforming into blackish yellow.
- After 48 hours of trituration, *Parada* particles almost disappeared and the mixture turned into dark black colour. But, when rubbed between the fingers, small particles of *Parada* were seen.
- But after 96 hours of trituration, there was no free *Parada* particles observed when rubbed between the fingers. *Kajjali* attained *Niscandratva* quality.
- After 120 hours of trituration, the prepared *Kajjali* fulfilled all the criteria of *kajjali*.
- This prepared *Kajjali* was fulfilling the test of *Varitara* and *Rekhapurnatva* too.
- The entire powder become fine, black, smooth, lustreless and *Kajjalabha*.

Table 6: Showing properties of obtained kajjali.

Tests	Appearance of <i>Kajjali</i>
Consistency	Fine powder
Colour	Black
Touch	Smooth
Smell	no specific smell

Thus, in this way total 390 gm of *kajjali* was prepared which is divided into 3 subgroups in order to make 3 batches *bola parpati*.

5.1.5 Observations during Bola Parpati Nirmana

Table 7: Showing observations during bola parpati nirmana.

Sr. No.	Details	Results
1	Quantity of <i>shuddha bola churna</i>	100gm for each batch
2	Quantity of <i>kajjali</i>	100gm for each batch
3	Average time taken to procedure	10min average
4	Final weight of product obtained	1. 180gm 2. 184gm 3. 190gm
5	Weight loss during procedure	1. 20gm 2. 16gm

	3. 10gm
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Observations

- The colour of *bola* was brownish having specific smell.
- After adding *kajjali* in *sharava* started melting after few minutes.
- As *bola* is so sticky after adding milk to it some *bola* sticks to dish.
- After 5 min almost all *kajjali* melts and sticky
- bola* was added to it, *bola* covered with *kajjali* and whole mixture becomes black.
- When mixture taken on *patra* some amount of *kajjali* adhere to *sharava*.
- During repeated procedure the loss becomes low.

5.2-Analytical study -Observation and results

Table 8: Showing physical analysis of final products.

Sr. No.	Ingredients	Sparsha	Rupa	Rasa	Gandha
1	Bola parpati 1	Mrudu	Blackish	Katukashaya	sugandha
2	Bola parpati 2	Mrudu	Blackish	KatuKashaya	sugandha
3	Bola parpati 3	Mrudu	Blackish	Katu- kashaya	sugandha

Comparison of Physio-Chemical Characteristics of Self-Prepared

Bola Parpati (bp a) and Sample of Other Company (bp b)

Average results of 3 batches of *Bola parpati* were taken

for comparison as self-prepared *bolaparpati* (BP A) with the sample of other company (BP B).

Table 9: Showing comparative evaluation of Physio-chemical characteristics of self-prepared *Bola parpati* (BPA) and sample of other company (BP B).

Sr. no.	Parameters	BPA	BP B
1.	Description	Dark brownish blackcolour, taste bitter,	Dark brownish blackcolour, Taste bitter
2.	pH	5.58	5.08
3.	Moisture content @ 110 ⁰ C	4.26%	4.48%
4.	Water soluble extract	23.01%	20.08%
5.	Total ash content	20.36%	13.09%
6.	Water soluble Ash	0.69%	2.69%
7.	Acid insoluble ash	Nil	Nil
8.	Limits for heavy metal 1. mercury	0.97 ppm	0.97ppm
9.	sulphur as S	41.39%	40.2%
10.	Particle size (SEM)	1.69 μ m -899 nm	3.30 μ m - 856 nm

6. DISCUSSION

During whole process mixing of *bola* in melted *kajjali* was challenging task. To mix sticky *bola* in melted *kajjali* within time limit to attain proper *paka* for *parpatiKalpana*. *Madhyamapaka* was preferred best among the three *pakas*. So whole procedure was performed on *mandagni*. Weight loss was 20%, 16% and 10% in batch 1, 2, 3 respectively. The weight loss during *parpati nirmana* process due to melted *kajjali* adhered to *sharava* which was difficult to remove. Appearance of *parpati* was black, thin flake with typical resin *gandha*.

On the organoleptic evaluation both BP A and BP B showed smoothness with no perceptible coarse powder in it. Both self -prepared and market sample of *bola parpati* shows similarity in organoleptic properties. Both the samples have *katu- kashaya* (bitter) taste. BP A has typical aromatic resin smell to it but BP B does not have specific smell to it. It may be due to freshness of raw

bola and the process of preparation. Both BP A and BP B are black in colour; as *kajjali* and *bola churna* are major ingredients of *bola parpati* and both are black in colour.

On the evaluation of physio-chemical analysis, it is found that both BP A and BP B have slight difference in particle size. Self- prepared sample shows more fineness than market sample.

pH value of BP A is 5.58 and BP B is 5.08; both are acidic in nature, but BP B is more acidic as compared to BP A. Moisture content of BP A is 4.26% whereas that of BP B is 4.48%. This suggests that BP A has slightly less moisture in it as compared to BP B and less the moisture content more the life span of compound. So, we can say that BP A has more life span than BP B. Total Ash value of BP A is 20.36% and BP B is 13.09%. Total Ash value suggests inorganic matter in the compound. As *bola parpati* contains *kajjali* which is inorganic

substances. So, the ash value of both samples suggests they are the herbo-mineral formulations. There is no difference in the value of acid insoluble ash. Water soluble extract is much higher in BP A as compared to BP B. Water soluble extract is the extract of herbal drugs which are soluble in water. Water soluble extract suggests that BP A have presence of more Carbohydrates, Flavonoids, Sterols and triterpenoids, Alkaloids, tannins and Phenolic compound.

Further Scope for Research

- Pre-clinical research is needed to study the pharmacodynamic and pharmacokinetic action of *bola parpati*.
- Clinical Research is needed to compare the efficacy of self-prepared *bola parpati* and available market sample.
- Research is needed to study the efficacy of *bola parpati* in different conditions of *asrugdara*, *raktapitta* clinically.
- Research is needed to study pharmaceutical properties of different available *bola* sample.
- Research is needed to set standard parameters for *bola* sample because in no standard information or monograph available in API.

7. CONCLUSION

Bola parpati was prepared in three batches to standard its physiochemical characteristics according to the texts. On the basis of physiochemical characteristics average of three batches was compared with sample of other company. Organoleptic properties of self-prepared *bola parpati* and market sample were almost same. BP A was having less moisture content, life span of BP A may be better than BP B. Water soluble extract are much high in BP A, this suggest that BP A have presence of more Carbohydrates, Flavonoids, Sterols and triterpenoids, Alkaloids, Tannins and Phenolic compound. Self-prepared *bola parpati* and market sample shows similarity in its organoleptic properties. This is suggestive of both self-prepared and market samples may be prepared by same methods. Difference in analytical properties of both samples was noticed. These variations are indicative of standard range for *bola parpati*. On the basis of above study, we can conclude that there was a slight difference in the pharmaceutico analytical properties of self-prepared and market samples of *bola parpati*.

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