



## A COMPILED REVIEW ON PHARMACEUTICO-ANALYTICAL STUDY OF GUDUCHYADI LOUHA

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Article Received on 24/06/2023

Article Revised on 14/07/2023

Article Accepted on 04/08/2023

### ABSTRACT

In the current kinetic era, Rasaushadhies have given Ayurveda a complete novel health care look. The innate qualities like quick action, lesser dose, tastelessness, prolonged self life, better palatability of Rasausadhies have helped them to conquer the demand of patients as well as pharmaceutical proprietors. Among the Rasaushadhies, Bhasmas are used mostly and occupy the highest attention. Among all the metals Louha is more extensively used because of its rich availability & economy. Guduchyadi Louha is one of the Kharaliya Kalpa explained in Bhaishajya Ratnavali, which is useful in Vatarakta. This Louha Kalpana is said to be "sarvarogaharam param" that it useful in all disorders. Physico-chemical analysis used to fix up the standards for quality of raw drugs as well as finished products. In this study the physico-chemical analysis of the different samples, right from the raw materials to final product is evaluated. The aim of this study is to know the particular physicochemical changes and effect of different Samaskaras (Shodhana, Marana etc.) during the pharmaceutical processing.

**KEYWORD:** Rasaushadhi, Guduchyadi louha, Physic-chemical analysis, Samskar.

### INTRODUCTION

*Rasashastra* may be defined as a branch of *Ayurveda* which deals with the various pharmaceutical processes of *Shodhana*, *Marana*, *Jarana*, *Murchana* and other detail description of metals, minerals, poisonous herbal drugs and animal products used therapeutically in practice of *Ayurveda*.

In ancient texts of *Rasashashtra* various metals are described viz. *Suvarna*, *Rajat*, *Tamra*, *Louha*, *Naaga*, *Vanga* etc. among that *Louha* is one of the most important and useful metal. The therapeutic use of metals dates back to the *Vedic* period. However evidence of their internal use is available from *Samhita* period only.

*Louha Kalpana* is preparation with *Louha Bhasma* as main ingredient added to other drugs. These drugs are reduced to fine powder & mixed with *Louha Bhasma* and is given with prescribed *liquids*. *Louha* was extensively used in various *Anjanas* for eye diseases, in various *Lepas* meant for blackening of hairs, various skin disorder, disease of mouth, etc.

*Bhasma* is the basic and unique preparation of *Rasashastra*. Being a student of *Rasashastra*, emphasis has been given to work on some metallic *Bhasma*

preparations. During processing they are subjected through *Samaskaras* like *Shodhana*, *Marana* etc. and having excellent therapeutic potency.

*Louha Bhasma* is the most widely used *Bhasma* preparation in general practice. *Louha kalpana* is considered as one of the most useful and best *Kalpana* in *Rasashashtra*. But till date no specific study has been done on *Guduchyadi Louha* This study was done under following headings.

*Guduchyadi Louha* were prepared by the method mentioned in.

#### Bhaishajya Ratnavali

- *Guduchi Satva*, *Triphala*, *Trikatu*, *Trimad* weretaken in same proportion.
- *Louha Bhasma* was taken in proportion same as above mixture.

The above constituents were mixed together. Then contents were made into Gutika (Tablets) having weight about 2 to 3 Ratti and dried in sun light, then preserved in air tight glass container.

With reference of colour, odour, consistency etc., there were many changes observed during preparation of Guduchyadi Louha. Initially all the raw materials were mixed. The colour of mixture was brownish.

## MATERIAL AND METHODS

### Pharmaceutical study

Guduchyadi Louha was prepared by the reference of *Bhaishajya Ratnavali*. The process include following steps.

#### i. Collection of raw drugs

Drugs in crude form were collected from authentic source of medicine provider of local market. There authenticity was confirmed by the experts of respective departments in this institute.

#### ii. Shodhana of Louha

Louha Shodhana was done in two steps. *Samanya Shodhana* was done according to reference of *RRS*; *Shodhana* of all *Louha varga* is commonly mentioned. Initially 800gm of *Louha* flakes were taken and after *Shodhana* 720gm of *Louha* flakes of black colour were obtained.

*Vishesh Shodhana* was done according to reference of *RRS*. In this process *Louha* of wt. 720gm was taken. After *Nirvapana* process *Louha* flakes were broken in small pieces and finally gray coloured *Louha* powder was obtained. Final wt. of *Louha* after *Vishesh Shodhana* was 705 gm.

#### Changes of material during Shodhana process (*Nirvapa*)

After heating, immediate cooling in liquid media leads to decrease in tension and increase in compression force. Repetition in heating and cooling causes disruption in compression tension equilibrium leads to increased brittleness, reduction in hardness and finally reduction in the particle size. During red hot state some metals react with atmospheric oxygen and compounds are formed on the surface. Expansibility differs from metals to compounds on heating. So on repeated heating cracks are seen on the surface (generally expansibility of compounds are less than metals) leads to separation of compound part.

During red hot state of the metals and minerals volatile chemical impurities like arsenic are removed completely. Iron when heated to red hot, reacts with atmospheric oxygen or steam to form ferrous-ferric oxide ( $\text{Fe}_3\text{O}_4$ ), copper furnishes in moist air and converted to basic copper sulphate, which on red hot state is completely decomposed to cupric oxide (black oxide of copper).

#### iii. Marana of Louha

Here *Louha Bhasma* was prepared by using two different methods of *Marana*. In 1<sup>st</sup> method, *Louha Bhasma* was prepared according to reference of *RRS* in which *Shodhit Louha* was taken in the quantity of 400gm and after

*Marana* 310 gm *Louha Bhasma* was obtained. Total 21 *puta* were given to obtain *Raktavarna Louha Bhasma*.

In 2<sup>nd</sup> method, *Louha Bhasma* was prepared according to reference of *YR* in which *Shodhit Louha* was taken in the quantity of 250gm, after *Marana* 202 gm of *Louha Bhasma* was obtained. Total 23 *puta* were given to obtained blackish red colour *Louha Bhasma*.

During *Bhavana*, the physical form of the material changes when stress in the form of attrition is applied. In this process, liquid media is used as a *Bhavana dravya*, it is observed that finer particles are achieved by trituration.

During *Putapaka*, final change in the physical form of the material takes place. Chemical reaction occurs during *Shodhana* in some metals. Heating during *Putapaka* causes linear expansion of both the metal and the compound but the expansion of metal and compound are different. And this difference in the linear expansion leads to separation of the compound from the metal, causing exposure of the metallic part which facilitates further change. Repetition of this process leads to reduction in particle size and fineness of the particles.

After *Marana*, the metals generally convert to their compound form, which are biologically favorable to the body.

#### Guduchyadi Louha Nirman

*Guduchyadi Louha Nirman* was done according to reference of *Bhaishajya Ratnavali* by taking 10 gm each of the herbal material and *Louha Bhasma* was taken in quantity of 100 gm. These procedure leads to formation of 200 gm of material powder. This powder was used for making tablets of approximately 150 to 200 mg each by manual pill rolling movement of hand. Initially water was used for binding the tablet but tablets became very soft and easily breakable. Hence we used Gum Acacia in 10% concentration as a binder and tablets were prepared. This formed approximately 1000 tablets

#### Analytical Study

Analytical study was done to see the physico-chemical changes and effect of different *Sanskaras* (*Shodhana*, *Marana*, etc.) during the pharmaceutical processing.

#### Classical analytical parameters

On organoleptic evaluation both *Louha Bhasma* and *Louha* showed smoothness, tasteless with no specific odour and produced no perceptible sound during chewing. *Louha Bhasma* was *raktavarna* (reddish-black) in colour. GL showed smoothness, GL tasted like *Triphala* colour of GL was black.

All the classical analytical parameters have definite significance. *Varitara* and *Unam* test indicate lightness and fineness of the *Bhasma*; *Rekhapurnata* test indicates micro fineness of the *Bhasma*; *Nishchandrata* test indicates transformation of the specific metallic luster to

lusterless compound after Marana whereas *Nirdhuma Bhasma Pariksha* indicates that there is absence of organic matter in the bhasmas.

Here *Bhasma* passed all the classical physico-chemical parameters, so the *Bhasma* should be considered as properly prepared and having properties according to classical standards.

With reference of colour, odour, consistency etc., there were many changes observed during preparation of *Guduchyadi Louha*.

Initially all the raw materials were mixed. The colour of mixture was brownishblack.

**Table 1: Showing Results of Organoleptic characters.**

Sr. no.	Organoleptic characters	GL
1.	<i>Shabda</i>	No
2.	<i>Sparsha</i>	Soft
3.	<i>Rupa</i>	Black
4.	<i>Rasa</i>	Like <i>Triphala</i>
5.	<i>Gandha</i>	Like <i>Triphala</i>

### Modern analytical parameters

**Table 2: Showing the Results of Loss on Drying - GL Sample.**

Sr. No	Reading	Wt. of Empty Crucible (gm)	Wt of Crucible with sample (gm)	Wt of Crucible after drying (gm)	Loss on drying in (gm)	% of Loss on drying
1	Sample1	16.610	21.610	21.034	0.576	11.52%
2	Sample2	14.140	19.140	18.665	0.475	9.5%
3	Sample3	15.310	20.310	19.795	0.515	10.3%

Mean % of LOD of GL is 10.44%

**Table 3: Showing the Results of Loss on Ignition- GL.**

Sr. No	Reading	Wt. of Empty Crucible (gm)	Wt of Crucible with sample (gm)	Wt of Crucible after Ignition (gm)	Loss on Ignition in (gm)	% of Loss on Ignition
1	Sample1	16.975	18.975	18.121	0.854	42.7%
2	Sample2	15.920	17.920	17.062	0.858	42.9%
3	Sample3	16.420	18.420	17.519	0.901	45.05%

Mean % of LOI of GL is 43.55%

**Table 4: Showing the Results of pH estimation of GL.**

Sr. No.	Reading	pH 1% concentration	pH 10% concentration
1.	Reading 1	6.4	6.5
2.	Reading 2	6.2	6.3
3.	Reading 3	6.1	6.2

**Results:** Mean pH of GL is 1%: 6.23 Mean pH of GL is 10%: 6.33

### Tablet Hardness Test

**Table 5: Showing the Results of Tablet Hardness by using Tablet Hardness Tester – *Guduchyadi Louha*.**

Sr. No	Reading	Mean(kg/cm <sup>2</sup> ) Value
		GL
1	Sample1	2
2	Sample2	1.5
3	Sample3	2
4	Sample4	1.5
5	Sample5	1.7
		1.74

### RESULTS

1) The mean value of Hardness of GL tablet is 1.74 kg/cm<sup>2</sup>

## Uniformity in Size of Tablet

Table 6: Showing the Results of Uniformity in size of tablet *Guduchyadi Louha*.

Sr. No	Reading	weight of 10 tablets of GL (gm)	Weight of 1 tablet of GL in (mg)	% of deviation from mean	Weight of 10 tablets GL (gm)	Weight of 1 tablet of GL in (mg)	% of deviation from mean
1	Sample 1	1.82	182	-4.21	2.05	205	-2.84
2	Sample 2	1.92	192	+1.05	2.20	220	+4.26
3	Sample 3	1.98	198	+4.21	2.04	204	-3.31
4	Sample 4	1.94	194	+2.10	2.06	206	-2.36
5	Sample 5	1.84	184	-3.15	2.19	219	+3.79
	Mean value	1.90	190		2.11	211	

## RESULTS

The average wt. of 10 tablets of GL is 1.90 gm.

## Tablet Friability Test

Table 7: Showing the Results of tablet Friability Test – *Guduchyadi Louha*.

Reading	Initial Weight of 10 tablets (gm)	Weight after Rotating in Friability tester for 2 (gm) min	Weight loss in gm	% of wt. friability	Loss After
	GL	GL	GL	GL	
Sample 1	1.82	1.51	0.31	17.03%	
Sample 2	1.92	1.57	0.35	18.22%	
Sample 3	1.89	1.52	0.37	19.57%	
Sample 4	1.94	1.55	0.39	20.10%	
Sample 5	1.84	1.52	0.32	17.39%	
		Mean	Value	18.46%	

## Results

- 1) The mean value friability of GLT tablet is 18.46%
- 2) The mean value friability of GLD tablet is 0.48%

## Tablet Disintegration Time

Table 8: Showing the Results of tablet Disintegration time (DT) – *Guduchyadi Louha*.

	Disintegration time in distilled water	Disintegration time in 0.1N HCl
	GL	GL
Sample 1	29.28	20.16
Sample 2	29.32	21.36
Sample 3	29.22	20.35
sample 4	28.08	20.32
sample 5	28.41	21.00
Mean Reading	28.36	20.47

## Results

- 1) The mean value of Disintegration time of GLT tablets in **Distilled water** is 28.36 min.
- 2) The mean value of Disintegration time of GLT tablets in **0.1N HCl** is **20.47 min**.

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