

Comparative Pharmaceutical -Analytical study of *Sushruta Lauha* *Ayaskriti* and *Lauha Bhasma*

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ABSTRACT:

Ayaskriti is an ayurvedic formulation containing iron. It is a specific metal processing technique developed in ancient times to make iron suitable for internal use. **Objective:** To prepare and physicochemical evaluate *lauha Ayaskriti* (*Sushruta*) and *lauha bhasma*. **Materials and methods:** *lauha Ayaskriti* (*Sushruta*) and *lauha bhasma* was prepared as per ayurvedic text and characterized by organoleptic characters, Physico-chemical parameters. **Results:** This study clearly revealed *bhasma* prepared as per *Sushruta* and *Rasatarangini* are passed as per ayurvedic *bhasma* parikshan. **Conclusion:** The study of XRF of *lauha Ayaskriti* and *lauha bhasma* value of Fe is present in the elemental form along with other form of oxide. Further studies are required to prove the medicinal efficacy of this medicine.

Key word: *Ayaskriti*, *Lauha*, *Bhasma*, iron, *Ayas*.

Introduction:

The ayurvedic drugs are obtained from natural sources only i.e. plants, animals and minerals. Conversion of metal and

minerals into acceptable form i.e. *Bhasma* is unique technology of ayurveda. Various procedure like *shodhan*, *Marana* (incineration process) etc. applied for the preparation of *bhasma*, will play a greater role in converting the material into acceptable form. Considering these views in present research work the *churna* form of *Lauha Ayaskriti*¹ (*Sushruta*) and *lauha bhasma* prepared by as per *Rasatarangini*² were prepared by using same raw materials viz. iron turnings. Ayurveda literature from *samhita* period, where metals are made into powder for internal administration by means of a process called *Ayaskriti*. *Ayaskriti* literally means “making of *lauha*”. The process governed in *Ayaskriti* includes intense heating of the metal followed by repeated quenching into some organic media till the metal is transformed into its finest form³.

Materials and method:

Procurement of raw material

The authenticated raw materials *Teekshna lauha* (fe turning) were collected from the local market, *Tila Taila* ,*Triphala* ,*Kuntha* and *Salsaradigana*⁴ *dravya* were collected from local market ,*Gomutra* (cows urine) were collected form dairy farm osmanabad.

Methods

Preparation of *lauha Ayaskriti* as per *Sushruta samhita*

Reference: *Sushruta samhita* 10/11

Equipment: Iron Ladle, Stainless Steel Vessel, Spatula, Measuring Mug, Weighing Machine, Gas, Match Box.

Ingredient:

- *Tikshana lauha turning*: 500gm
- *Saidhava Lavan*: 50gm
- *Sauvarchal Lavan*: 50gm
- *Vid Lavan*: 50gm
- *Audabhida Lavan*: 50gm
- *Samudra Lavan*: 50gm
- *Salsaradi Gana kwatha* (decoction):10 lit
- *Triphala kwatha* (decoction):10 lit

Procedure:

1. *Salsaradi Gana dravya* was weighed and soaked in water for a night.
2. On the next day that soaked mixture was kept on a medium flame to prepared decoction.
3. *Tikshana lauha* are smeared with solution of *panchalavan kalka* and heated red hot in the heat produced by *khadir kashtra* (wood).

4. It was later dipped in *triphala kwath* for 16 times and observed the changes of *lauha*.
5. Then again *lauha* was heated red hot and dipped in *salsaradi Gana dravya kashaya* for 16 times.
6. Every time solution of *panchalavan* use for before *lauha* patra heating red hot.
7. Same process repeated 16 times.
8. Later it is heated in fire produce by *khadir* wood and left there until the fire is lit off on its own.
9. Than it was collected and finely powdered in *khalva yantra*

Preparation of *lauha bhasma*

Reference: *Rasatarangini* 20/21

Equipment: Iron Ladle, Stainless Steel Vessel, Spatula, Measuring Mug, Weighing Machine, Gas, Match box

Samanya shodhana: In *Samanya shodhan* process the raw material (fe turning) was heated till up to red hot and immersed in each media viz. *Tila Taila* ,*Takra*⁵ ,*Gomutra* ,*Kanji*⁶ , and *Kullatha Kwatha*⁷ and kept for self cooling at room temperature. This process was repeated for seven times by using fresh media every time. After completion of the process, materials was filtered and dried under sunlight.

Vishesh shodhana: In this process prepared *triphala kwatha*⁸ taken *triphala* in equal quantity (1kg) and boiled in (24lit) till reduce to ¼th of the original volume of water to obtain *triphala kwatha*. Using this, repeated quenching

process of *Samanya shodhita lauha* was done. This process was done in seven times using fresh media. The *lauha churna* (coarse powder of iron turning).

Preparation of *Bhanupak*⁹: *Triphala kwatha* was prepared by heating equal quantity of *triphala* to *vishesh shodhit lauha churna* with two parts of water and reduced to 1/4th of original volume. This *triphala kwatha* added to *lauha* obtained after *vishesh shodhan* and dry under the sunlight. It took a maximum 3 days for completed of this process. Same process repeated seven times. Obtained *lauha* was taken for *Sthalipak* process in *Triphala kwatha*.

Preparation of *Sthalipak*¹⁰:

In this step *Triphala kwatha* was prepared by taking 3times of *lauha* obtained after of *bhanupak* and 16 times of water was added to it. All material boiled in stainless steel container to reduce the volume 1/8th of the original volume. *Lauha* obtained after *bhanupak* was washed with hot water and placed in a *sthali*, to which above freshly prepared *Triphala kwatha* was added and intense heating was given for complete evaporation of water contents of *Triphala kwatha*. On complete drying of the

material, again *Triphala kwatha* was added and subjected to heat. This process required 4 hour for complete drying of *Triphala kwatha*.

Preparation of *Putapaka*¹¹: In the process of *puta lauha bhasma* should be prepared by triturating with *triphala kwath* to subjecting to *puta*. In this process, freshly prepared *Triphala kwatha* was mixed with *lauha* obtained after *Sthalipaka in khalva yantra* triturating was done. The paste formed during this triturating was made into *chakrika* (pellets) and dried under sunlight. After complete drying of *chakrika*, it was taken in *sharava* and covered with another inverted *sharava*. The space between the two *sharava* was covered with clay smeared cloth; this specific process is known as *Sharava samputikarana*. After this, it was subjected to *puta* 5 kg of *upale* and temperature was allowed to gradually rise to 650⁰ C to 800⁰c after self-cooling. The next day, pellets were collected from *sharava* and again triturated with *Triphala kwatha*. Same process of *puta* was repeated for 12 times to obtain *lauha bhasma* of desired quality.

Observations and Results:

Table no: Observation of during *triphala kwatha* and *salsaradi kwatha*

Sr. no	Quenching <i>Triphala Kwatha</i>			Quenching of <i>Salsaradigana Kwatha</i>		
	Initial Weight (gm)	Final Weight (gm)	Changes after quenching	Initial Weight (gm)	Final Weight (gm)	Changes after quenching
1	500	510	After first quenching; cracks+ were seen	430	420	Salsaradi kwatha Gandha present, reddish colour
2	510	508	Colour change of lauha cracks+	420	405	After kuttan more lauha churna obtained
3	508	505	Blackish colour and cracks++ seen more prominently	405	398	Colour of lauha reddish black in colour
4	505	500	Metallic luster was lost	398	395	Particle size of lauha reduce
5	500	496	Lauha was more brittle	395	390	Bluish black in colour
6	496	494	Bluish black colour	390	388	60% of lauha churna obtained
7	494	490	20% lauha churn obtained	388	382	Loss of lauha 15%
8	490	488	Turning were easily broken	382	378	Reddish black in colour
9	488	485	Metallic luster totally lost	378	371	Reduce the particle size
10	485	480	Lauha curls soft in consistency	371	366	A specific obnoxious smell coming after quenching
11	480	478	40 % particle size reduce	366	363	Grayish black colour churna
12	478	470	More brittle	363	360	80 % of churna obtained
13	470	465	Lauha churna more obtain	360	355	Colour of lauha became blacker.
14	465	455	Size of particle reduce	355	350	90% blackish churn obtained
15	448	440	50% lauha churna obtained	350	344	Blackish colour of churna
16	440	435	Reddish colour of lauha seen	344	342	Same as it is

Table no: Observation of during *Samanya shodhana, vishesh shodhan, bhanupak and Sthalipaka*

Sr no	Media	initial weight(in g)	Final weight (In g)
1	Tila taila	500	540
2	Takra	540	550
3	Gomutra	550	542
4	Kanji	542	536
5	Kullatha kwatha	536	532
6	Triphala kwatha	532	540
7	Bhanupak	540	780
8	Sthalipaka	780	950

Table No.: Physico-chemical analysis of *lauha Ayaskriti and lauha bhasma*

Test	Results	
	Lauha Ayaskriti	Lauha bhasma
Form	Churna (powder)	Churna (powder)
Colour	Light blackish	Pakva jambu phalvarna
Taste	Taste less	Taste less
Texture	Amorphous	Amorphous
Ph	7.84	7.68
Loss on drying (%)	1.80	0.04
Ash value (%)	81.37	95.67
Acid insoluble ash	13.52	0.64
Water soluble ash	30.51	8.0
Particle size	120 mesh size	120 mesh size

Table no: Results of XRF analysis showing elemental composition:

Sr. no	Component	Analyzed results (Fp method mass %)	
		Lauha Ayaskriti	Lauha bhasma
1	Fe ₂ O ₃	66.5	71.0
2	SiO ₂	2.65	7.32
3	K ₂ O	5.37	6.01
4	Cl	16.1	1.91
5	CaO	3.00	3.57
6	Al ₂ O ₃	1.94	3.59
7	So ₃	1.45	2.12
8	MgO	0.833	1.40
9	P ₂ O ₅	0.667	1.07
10	MnO	0.485	0.521
11	Cr ₂ O ₃	0.360	0.439
12	CuO	0.256	0.432
13	ZnO	0.201	0.182
14	Co ₂ O ₃	0.202	0.208

Table No. Observation recorded after *puta of lauha bhasma*

Putra	Initial Weight (gm)	Final weight (gm)	Changes of texture before	Changes of texture after
1 st	950	740	Blackish colour on triturating	Dark brown colour
2 nd	740	620	Pellets were made easily and rough in consistency	Pellets breaks easily, surface of pellets was brown
3 rd	620	425	After triturating colour turns to grayish black	Pellets were breaks easily, surface of pellets was blush black
4 th	425	418	Particle size decreases and soft in consistency	pellets were very fragile and break even touch
5 th	418	402	Pellets were made easily	Hardness of pellets Brownish black in colour
6 th	402	390	Bhasma was very soft ,bluish black in colour	Hardness of pellets, colour change into brassy-yellow
7 th	390	388	Colour was same material become stickier	Hardness of pellets, colour of blackish red
8 th	388	380	Same quantity liquid media triturating	Pellets were little hard blackish red in colour
9 th	380	375	Colour of bhasma maintained	Colour of bhasma Pakwa jambu phala varna
10 th	375	369	Colour and softness of pellets maintained	Metallic taste present
11 th	369	365	Colour and softness of pellets maintained	70% of Varitartwa present
12 th	365	360	Same as previous	Bhasma passed all bhasma parikshan

Discussion:

In *Ayurvedic* literature the internal use of metal used for medicinal purpose. When it was used in the form of micro fine powder obtained by heating and quenching the metal into some liquid media known as “*Ayaskriti*.” In *lauha Ayaskriti (Sushruta)* in this process *lauha* turning includes intense heating followed by quenching *triphal kwatha* and *salsaradi Gana dravyas kwatha* till it

converted to *anjanvat* ~ fine powder. In *Sushrut samhita Ayaskriti* mention in *Kustha chikitsa*.

During this process heating and quenching changes texture, weight from which is mention in the table no. It was observed that, the hard shining Fe metal was converted into black coloured lusterless powder of brittle material. In *triphal kwatha lauha* turning convert into 50% powder and 50% coarse powder

obtained. After heating and quenching of *salsaradi Gana dravya kwatha* 50% coarse powder turn into powder form then in *khalva yantra mardana* (trituration) of 15 days *lauha Ayaskriti* was done. The results of various physicochemical parameter colour, taste, texture, pH, loss on drying, ash value, acid insoluble ash, water soluble ash, particle size (table no). And XRF elemental composition are tabulated in table no.

In *lauha bhasma* for the process of *Samany shodhan* and *vishesh shodhan*, the process of *Nirvapa* was adopted. For *Samanya shodhan*, the iron turnings were heated till they were red hot and then they were dipped in different media i.e. *Tila Taila, Takra, Gomutra, Kanji and Kulattha kwatha* (seven times). At each time of quenching, 500 ml quantity of media was taken. The average temperature of the heating device was 800°C. The average temperature of the red hot iron turning was 750°C during the procedure. The use of a particular media and particular sequence is notable. The probable concept behind using such variation may be removal of impurities from the drug in a particular acidic or alkali media. *Shodhan* process along with purification leads to reduction of particle size. Marked reduction in particle size, i.e. ratio of small: large particles, was obtained 50:50 by weight up to shodhana in kanji. Immediate cooling leads to microscopic cracks. For attaining hardness, this is heated and cooled down slowly. After the process of *Bhanupak*, there was a huge gain in the weight, of approximately double of the original weight, which may be due to accumulation of triphala kwatha residues. For the process of *Sthalipaka, triphala*

was taken in a quantity three-time that of *Lauha churna* for preparing *kwatha as Bhanupak*, where the amount was equal that of *Lauha churna* taken before. Therefore, a higher gain in weight, nearly 1.5-times from the original weight, was observed. The absorption of food iron can be greatly influenced by other constituents in the diet, such as ascorbic acid (vitamin C) and phenolics. Ascorbic acid increases the bioavailability of iron by converting Fe^{3+} to Fe^{2+} , while phenolics can reduce the bioavailability of iron by binding to its phenolics (e.g., tannins)¹². The process of *Putra paka* was carried out at 450°C temperatures with the 4 kg upale heat was giving for the *agnisahatva* of metal. Observing research work done on *Lauha Bhasma*, up to the 4th puta, pellets were very fragile and were broken down even by touch, and the color of brownish-red was attained. In the 5th puta, the pellets were very hard and in the 6th puta, they were brassy-yellow in color suggestive of the formation of an entirely new compound that was undesirable as color of *Lauha Bhasma* is indicated 9th puta “*Pakwajambu phala varna*” or brownish-red. On further puta, the temperature and upale was increase to 600°C and 6kg, and it was observed that the concentration of the yellow compound of iron decreased and gradually converted to the desired color of *Lauha Bhasma* after 12 puta

Conclusion:

Lauha Ayaskriti preparation includes steps as *nirvapanas* of *triphal kwatha* and *salsaradi Gana dravya kwatha*. It is also very important to understand each and every step to set up standard for the *lauha Ayaskriti* preparation.

Lauha bhasma preparation includes major steps such as *Samanya shodhana*, *vishesh shodhan*, and *Trividhapak paka*, *bhanupak*, *Sthalipak* and *Putpak*. *Lauha Ayaskriti* and *lauha bhasma* is better prepared with the respective media showed better results indicating for the manufactures.

From the above pharmaceutical and analytical study on *lauha Ayaskriti* and *lauha bhasma* it can be conclude *Ayaskriti triphala kwatha nirvapna* for the proper formation of *bhasma* and *Salsaradi Gana dravya kwatha* make the metal brittle, enhance the guna and reduce the size of particle to increases bioavailability of drug into the body. In *lauha bhasma Samanya* and *vishesh shodhan* help purification of iron and make the metal brittle. *Trividhapak paka* enhance the guna of it and reduce size of *bhasma*. Both the *bhasma* more than similar properties and prove ayurvedic parameters.

References:

1. Ayurveda tattva Sandipik aHindi commentary Editor, Susruta Samhita, chaukhambha Sanskrit santhan Varanasi,2010 Ausadha Ayaskriti and maha ausadha ayskriti in, chikitsa. Sthana 10/11 for mahakutha
2. Kashinath Shastri Editer Rasatarangini Motilal Banarasidas, 2014 Varanas, india P.508, 509
3. Kashinath Shastri Editer Charak Samhita (part-2)collaborated vidyaotini hindi commmentary chaukhambha bharti academy, chikitsa sthana 1:3/21-23 Rasayanadhyaya 3rdpada
4. Ayurveda tattva Sandipik Hindi commentary Editor, Susruta Samhita, chaukhambha Sanskrit santhan Varanasi,2010 Sutrasthana 38/8-9.
5. Ayurveda tattva Sandipik aHindi commentary Editor, Susruta Samhita, chaukhambha Sanskrit santhan Varanasi,2010, Sutrasthana 45/856
6. Sharma ayurveda mandir, Parad Vidnyanium, Sharma Ayurved mandir datiya, (M.P) 1997. chapter no:4/81/82 p.no-56.
7. Jaikrishnadas ayurveda series, Sharandhara Samhita, chaukhamba orientalia Varanasi 2013, Madhama Khanda 2/1.
8. Chaukhambha Bharati Academy Bhavprakash nighantu,Varanasi, india 1998 Chapter-4-P12.
9. Kashinath Shastri Editer Rasatarangini Motilal Banarasidas,2014 Motilal Banarasidas Varanas,india Taranga20/21, p 496
10. Kashinath Shastri Editer Rasatarangini Motilal Banarasidas,2014 Motilal Banarasidas Varanas,india Taranga20/21, p 497
11. Kashinath Shastri Editer Rasatarangini Motilal Banarasidas,2014 Motilal Banarasidas Varanas,india , Taranga20/21, p 498
12. Neetu singh (2010) Phamacetical study of lauha bhasma ,AYU/Jul - Sep2010/vol31/issue3.

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