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Preparation of Godanti Bhasma (Gypsum) by Muffle Furnace Using Traditional Method W.S.R. Rastarangini and its Comparative Physico Chemical Analysis

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Abstract: The *Godanti* comes under *Sudha varga* (Calcium compounds). It was first described by *Ras tarangini* (Ayurveda pharmaceutics) in a recent book on *Rasashastra*. Another book named *Rasamritam* also explained *Godanti. Godanti* is an easy to identify, non-controversial and easily available drug. Both the bhasma tested for different test like XRD, inorganic elements, Ash, pH , Particle size , Organoleptic test, Calcium percentages etc. the bhasma prepared by both method shows near about same results.The Godanti bhasma prepared by both the method has same analytical results but the Bhasma prepared by traditional method need more time and it is laborous than the bhasma prepared by Furnace method.

Keywords: Godanti, Rasashastra, Bhasma, Ayurveda

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Introduction

Rasashastra deals with the pharmacology and pharmaceutics of *Ayurveda*. It involves processing and therapeutic uses of metals and minerals. The therapeutic use and preparatory method of different Bhasmas of metals and minerals are found in *Rasashastra. Rasaushadhis* (Herbomineral preparations) are effective in very small dosage, easy palatable, have quick action without causing any bad effects. Under the title of *Sudha Varga* various types of minerals are described. *Godanti* is one of them. *Godanti* was first described by *Rasa-Tarangini*, which gives all the information about *Godanti*. Godanti is an easily available drug. Rasa-Tarangini has mentioned all theproperties of *Godanti*. that *Godanti Bhasma* (Ash form of Gypsum) is useful in *Pitta Jvara*, (Fever) *Jirana Jvara*, (Chronic fever) *Shwetpadara*(Leucorrhea*), Shwasa*(Respiratory distress*), and Kasa*(Cough), etc**. [1, 2].**

The ancient Acharya had advised "*Puta*"(Measure of Heat) process for *Marana* (Inciniration) of *Rasa dravyas*(Metals and Minerals) **[3].** In "*puta*" process "*Supakwam*" makes the medicine acceptable form for better assimilation of drug. It increases potency of drug by introducing some new properties. But during puta process gross changes seen. Here *Godanti* was used to observe the changes taking place during *the Marana* process by changing the source of heat i.e., Muffle Furnace instead of traditional method. Physicochemical assessment is required for comparison between furnace methodly prepared *Godanti Bhasma* and *Bhasma* prepared by traditional method. It is helpful for better understanding of the process and the state of the final product. The changes in *Godanti bhasma* prepared by both methods evaluate by using techniques like XRD, etc.

Aims and Objectives

The aims of the study are as follows:

01. To prepare *Godanti bhasma* by Muffle Furnace and by traditional method with special reference to *Rastarangini*
02. To evaluate their comparative Physico chemical analysis.

The objectives of the study are as follows:

01. Godanti Shodhan *(Purification of Gypsum).*
02. To prepare *Godanti Bhasma* by Muffle Furnace Method
03. To prepare *Godanti Bhasma* by Traditional Method.
04. To compare physicochemical analysis of *Godanti Bhasma* prepared by Muffle Furnace Method and by Traditional Method

Materials and Methods

Main raw drug

Main raw drug for this study is *Godanti. Godanti* is the major drug collected according to *Grahya-agrahya lakshanas* (Selection criteria) mentioned in *Rasa shastra* books and also authenticated by subject experts.

Associated raw drugs

Fresh *Nimbu* (Lemon) fruits, fresh *Kumari* (Aloe vera) are both the raw drugs required for this study.

Equipment

- *Dolayantra* (Instrument): Used for *Shodhan of Godanti.*
- Pyrometer: Used for temperature recording of *puta*.
- *Sharava*(Earthen saucer) : Used for *Maran of Gadanti*.
- *Khalva Yantra*: Used for Pounding of *Godanti.*
- *Multani Mitti* (variety Mud)
- Other Required Equipment like Gas Stove, Weighing Machine, Knife, Juice Extractor, Plates etc. are used.

Godanti Shodhana

Procedure

Godanti is taken and pounded in *Khalva yantra* (Morter and pistle) and made into small pieces. These are placed in *Vastra* (Cloth) and *Pottali*(Bunch) is prepared. *Pottali* is tied tightly so that the material should not come out. This *Pottali* suspended in *Dolayantra* containing *Nimbu swarasa* as a liquid media. This *Dolayantra* is subjected on *Agni* (Fire) for *Ardha yama* (1 ½ hour). While boiling, if the level of *Nimbu swarasa* is reduced, then again *swarasa* is added to maintain its level. After *ardha yama, pottali* is taken out and *Godanti* is washed with hot water several times. Then spread on clean cloth and kept for drying. After drying it is stored in an airtight container and used for further procedure **[4].**

Godanti Marana

Procedure

Godanti Marana is performed by two methods Muffle Furnace method and by Taraditional *puta* method. These two methods were proceeded through similar *marana* procedure i.e., same *Bhavana* (Trituration*)* Dravya, same temperature etc. The only difference was the medium of heat i.e., furnace instead of Traditional *Puta.*

Procedure (for traditional Puta-1)

- *Shodhit Godanti* taken and kept in sharava after recording their weight.
- *Shodhit Godanti* spread in sharava.
- It is closed with remaining another *sharava.*
- The *sharava* was placed upside down.
- The mouth of both *sharava* is sealed properly by using mud smeared cloth.
- Then *sharavas* are kept for drying.
- After proper drying second layer of mud smeared Cloth is done,
- In the same manner 7 times mud smeared Cloth is done.
- After completely dry it is subjected for *Gajaputa* (unit of heat) using 1000 cow dung cakes.
- Then in the pit arrangement of cow dung cake is 70% below *sharava* and 30% above *sharava* i.e. 700 cow dung cakes kept below *sharava* & 300 cow dung cakes kept above *sharava*.
- A small swab of cloth soaked in *Tila taila* (Sesamum oil) is placed over cow dung cake at the base & at the top.
- It is then ignited, which helps to ignite cow dung cake properly.
- When *puta* gets self-cooled, *Sharav Samputa* is taken out from the Pit.
- The seal of mud smeared Cloth removed by scratching.
- The *Godanti* from the *Sharava* taken out.

2nd Puta

Godanti Bhasma obtained from Traditional *puta* number 1 method is collected in *khalva Yantra and* is pounded.

- *Kumari swarasa*
- Then add fresh in the *khalva yantra.*
- *Bhavana sanskar* i.e., *mardana* now started with the help of *peshanaka*.
- Adding of *Kumari Swarasa* when *Bhasma* Soak all the *Kumari Swarasa*.
- In this way *Bhavna Sanskar* is continued for three days.
- At the end of *bhavana sanskara* the mixture of *Godanti bhasma* and *Kumari swarasa* become homogenous, soft and dough.
- Then the *chakrika*(Flakes) of this mixture is prepared manually.
- The *chakrikas* are made on butter paper because they will not stick on this paper and easy to remove.
- Then *chakrikas* were allowed to dry.
- The size of *chakrikas* is 5cm in diameter and l cm in thickness approximately.
- After drying, these *chakrikas* were placed in the *sharava* for *marana* procedure.
- *Chakrikas* taken and kept in *sharava*.
- *Chakrikas* is spread in *sharava*.
- It is closed with remaining another one *sharava*.
- The *sharava* placed upside down.
- The mouth of both *sharava* is sealed properly by using mud smeared cloth.
- Then *sharvas* are kept for dry.
- After proper drying second layer of Mud Smeared Cloth is done, in the same manner 7 times Mud Smeared Cloth is done.
- After completely dry it is subjected for *Gajputa,*
- Then in the pit arrangement of cow dung cake is placed 70% below *sharava* and 30% above *sharava* i.e, 700 cow dung cakes kept below *sharava* & 300 cow dung cakes kept above *sharava*.
- A small swab of cloth soaked in Tiia taila is placed over Cow dung cake at the base & at the top.
- It is then ignited, which helps to ignite cow dung cake properly.
- When puta gets self-cooled, *Sharav Samputa* taken out from the pit.

- The seal of *Mulatani mitti* is removed scratched.
- The *Godanti chakrikas* from the *Sharava* taken out and *Bhasma* is collected in an airtight container.

Furnace method

Procedure

- *Shodhit Godanti* kept in *musha* (crucible).
- While putting *Shodhit Godanti* in crucible, it was left 1/3rd portion empty on the top.
- Crucible containing *Shodhit Godanti* placed inside the Muffle Furnace.
- Then the door of Muffle Furnace closed tightly.
- Temperature recorded from the Traditional Method, is same applied to the Muffle Furnace.
- Near about 870° c was the average temperature of first *puta.*
- The temperature knob on the Furnace is set at 870 °C and machine is started.
- It took nearly 2.45 hours to reach the temperature at 870° C.
- Then furnace is kept on more 15 to 20 minutes.
- After that switched it off and allowed it to cool.
- After the cooling crucible taken out and *Marit Godanti* weighed.
- Then the *Marit Godanti* again pounded into *Khalvayantra* and made fine powder and subjected to next *Puta* by Furnace method.

Procedure 2nd Puta

- *Godanti Chakrikas* kept in musha i.e., in crucible.
- While putting *Godanti Chakrikas* in crucible, it was left 1/3rd portion empty on the top.
- Crucible containing *Godanti Chakrikas* placed inside the Muffle Furnace.
- Then the door of Muffle Furnace closed tightly.
- The temperature recorded from the Traditional method that is applied to the Muffle Furnace.
- Near about 8700 c was the average temperature of first puta. Then the temperature knob on the Furnace is set at 870 °C and the machine is started.
- It took about 2.45 hours to reach the temperature at 870 c.
- Then furnace kept on more 15 to 20 minutes.
- After that switched it off and allowed it to cool.
- After the cooling crucible is taken out and *Marit Godanti* weighed.
- Then the *Godanti Chakrikas* are taken and pounded into *Khalvayantra* and made fine powder and Bhasma is collected in an airtight container.

Analytical Study

The analysis of each drug is as follows.

A) Organoleptic characters of *Godanti*
01. Colour

02. Odour

03. Taste

04. Touch

B) Physico chemical analysis
01. Loss on drying

02. Extractive values in Alcohol and water

03. Ash values (total and acid insoluble)

04. pH Values

05. Calcium Percentage

06. Elemental analysis by XRD

07. Particle size

Results

The analysis conducted and the result deduced on the basis of the analysis are mentioned in tables 1 – 7.

Table 1. The results obtained by Organoleptic Test

S No	Organoleptic Characters	Raw Godanti	Shodhit Godanti	Godanti Bhasma (Furnace Method)	Godanti Bhasma (Traditional)
01	Colour	White	White	White	Whitish Grey
02	Odour	faint	faint	faint	faint
03	Taste	Not Specific	Not Specific	Tasteless	Tasteless
04	Touch	Rock like	Rock like	Powder like soft	Smooth Powder like soft

Table 2. The results obtained by Physico-Chemical Analysis of Godanti

S No	Test	Raw Godanti	Shodhit Godanti	Godanti Bhasma (Furnace Method)	Godanti Bhasma (Traditional)
01	pH	6.60	6.50	6.58	8.90

02	Water Soluble Ash	0.19%	0.450%	24.70%	2.12%
03	Acid Insoluble Ash	73.28%	74.62%	50.09%	52.45%
04	Moisture content	-	18.09%	-	-
05	Loss on drying	-	-	0.377%	0.381%

Table 3. The results obtained by XRD of Raw Godanti

S No	Sample	X – ray diffraction	
1	Raw Godanti	Major phase	Minor phase
		48.1 calcium Magnesium sillcide Ca mgsi	42.9 Ca2 Co0.90 7 Si2 Zn0.1

Table 4. The results obtained by XRD of Shodhit Godanti

S No	Sample	X – ray diffraction	
1	Shodhit Godanti	Major phase	Minor phase
		75.0 Ca2 Co 07 Si2	20.7 Enstatite Ca 0.4 Mg 1.6 06 Si2

Table 5. The results obtained by XRD OF Godanti Bhasma (Furnace Method)

S No	Sample	X – ray diffraction	
1	Godanti Bhasma	Major phase	Minor phase
		86.6 Calcium Sulphate, Anhydrate CaO4s	12.4 calcium catena polyphosphate ca06p2

Table 6. The results obtained by XRD OF Godanti Bhasma (Traditional Method)

S No	Sample	X – ray diffraction	
1	Godanti Bhasma	Major phase	Minor phase
		99.3 Calcium Sulphate, Anhydrate CaO4s	0.8 Cu 24Ga 54.58 mg 35.14

Table 7. The results obtained by Particle Size of Bhasma

Particle Size (Godanti Bhasma (Furnace Method)	Particle Size Godanti Bhasma (Traditional Method)
11.92µm	13.44µm

Discussion

Pharmaceutical Study

Under this caption the Shodhana of *Godanti, Marana* of *Godanti* by Muffle Furnace method and by Traditional *Puta* Method has been discussed.

Shodhana of Godanti

The numbers of different *dravyas*(drugs) are mentioned for *Shodhana* of *Godanti. The* dravyas are as follows:

- *Nimbu swarasa* (Lemon juice)
- *Dronapushpi swarasa* (Leucas cephalotus juice)
- *Prakshalana with Ushna jala* (Washing with Hot water)
- *Bhringaraja swarasa* (Eclipta alba)
- *Takra* (Butter milk)

Selection of Shodhana Process [4, 5]

As per above many dravyas are described for *Shodhana.* Here *Shodhana* process of *Godanti* was taken from *'Rasa-Tarangini' Grantha* ref.11/239. As the process is simple, the *Shodhana Dravya* i.e.*Nimbu swarasa* is easily and widely available. *Nimbu swarasa* has Amla rasa which can alter the *Doshas* (Impuritis) of *Godanti* and increases the potency of it and makes it useful in many diseases. In this study, *Shodhana* of *Godanti* was performed by *Swedana* (Steeming) of *Godanti* in *Nimbuswarasa* using *Dolayantra* for *Ardhayam* (1 ½ Hour). so, here mode of action of *Swedana* procedure for *Godanti Shodhana* has been described as follows.

Mode of Action of Shodhana Procedure

Godanti Swedana in *Nimbuswarasa* using *Dolayantra, Godanti* becomes brittle, impurities like dust, sand are destroyed. After the *Shodhana, Godanti* becomes White and brittle. *Dola Yantra* is the most preferred instrument for *Shodhana of Godanti*.

In Rasa Granthas description of *Godanti* comes under the title of *Sudha Varga*. As *Nirnbu Swarasa is having Dipana, Pachana and Ruchya* properties it may be used as a *Shodhana* media because *Godanti bhasma* is having the same properties. As *Amla rasa* is also having the *kshalana* property. Calcium is the main content in Godanti*. Godanti* chemical formula is CaSo4.2H20. Therefore, Calcium absorption is important. For better calcium absorption *amla rasa* is essential.

Marana of Godanti

In this study, *Marana* of *Godanti* was performed by the process of *Bhavana* of *Kumari Swarasa.* After that, *Marana* was done by two methods i.e., by Muffle Furnace Method and by Traditioanl Method.

Selection of Marana Process [6,7]

Here Marana process of *Godanti* was taken from *'Rasamritam' Grantha* ref.6/6. As the process is simple, the *Marana dravya* i.e., *Kumari* is easily and widely available. *Kumari* has *Tikta rasa* (Better taste), which can alter the *Doshas of Godanti* and increases the potency of it and makes it useful in many diseases. Here we gave *Bhavana* of *Kumari Swarasa* to *Godanti Bhasma*.

Godanti Marana by Traditional Method [8,9]

According to *Rasa-tarangini Grantha, Shodhit Godanti* is kept in two earthen saucers. The junction of two earthen saucers was sealed by mud smeared cloth. Three coatings of those clothes were done. After drying the previous one the next coat is done. In this manner three coatings were done. After drying, the *Sharav Samputa* was subjected to *Gajaputa*. In the *Gajaputa* 1000 cow dung cakes were used. 700 cow dung Cakes were spread in pit *Sharav Samputa* kept on it and remaining 300 cow dung cakes were kept over it and ignite, it after the self-cooling *Samputa* were removed from *puta* and observe the Godanti Bhasma prepared after first puta. Then afterwards *Godanti bhasma* triturated with *Kumari Swarasa*, Prepare *Chakrika* and in two earthen saucers and sealed. Then subjected for *Gajaputa*, repeat the puta heating till its *Bhasma* attains white colour.

In this process, *Godanti* was triturated with *Kumari swarasa* for about 5 hours, before puta process, till it became thick paste to prepare *Chakrika. Chakrika* having 4-5 cm in diameter and 1 cm in thickness approximately. Because every particle should get adequate heat for incineration. Then *Chakrikas* were allowed to dry under shadow, for drying of *Chakrikas,* it took long time. It may be because *Godanti* that is Calcium Sulphate, contains water of crystallization and it has tendancy to absorb moisture from air. Acharya Yadavaji Trikamji in his book *Rasamrita* especially remarked that Chakrika should be dried well, because wet *Chakrika* after subjecting to *Puta* causes blackening of *Bhasma*, In *Godanti Bhasma vishesh Varna* like Moon of Sharad Rutu is the main test. After drying of *Chakrika, Sharava Samputa* were done and subjected to puta. For 1st Puta 480 gm of Shuddha *Godanti* was used. After 1st Puta 460 gm of *Godanti Bhasma* was obtained. That means 20 gm of *Godanti Bhasma* lost during 1st Puta for 2nd Puta, 460 gm of *Godanti Bhasma* was triturated with *Kumari Swarasa*, prepared *Chakrika* and let them dry.

Sharav Samputikaran was done. After 2nd Puta 430gm of Godanti Bhasma was obtained. That means 30 gm of *Godanti Bhasma* was lost during 2nd *Puta*. The total Quantity obtained at the end is 430 gm for traditional method**.**

Temperature Recording (Traditional Method)

The temperature was recorded after every ten minutes interval from ignition of *Puta* with the help of Pyrometer. The temperature increases rapidly as the cow dung cakes went on burning. After complete combustion the temperature reached its peak value up to 870 c within 2.30 to 3.00 hours. And remained steady for ten minutes. Then it started to fall down gradually. Near about 14-15 hours were required to fall the temperature up to 30 c. *Godanti Bhasma* (Traditional Method) requires 2 Putas to pass the *Bhasma Pareeksha* completely and satisfactory.

Godanti Marana by Furnace Method

For *Godanti Marana* by Furnace method, *Shodhana* process was done same as of done in Traditional method. In this process, out of 500gm *Ashuddha Godanti*, it was observed that 20gm loss was found after *Shodhana of Godanti*. A total of 3-liter 600 ml *Nimbu swarasa* was used for *Shodhana* of Godanti. *Swedana in Dolayantra* conducted for *Ardhayam* means 1-hour 30mins. So, end product after *Godanti Shodhana* was found to be 480 gm. The loss may be due to dissolving some amount of *Godanti in Nimbuswarasa*. Some amount of material was lost during pounding in *Khalvayantra*. Some amount was also stuck in the surface of *Khalvayantra*. It may also be due to evaporation of water content from the *Godanti*, when it was subjected to *Swedana in Dolayantra*. *Shodhit Godanti* was placed For *Marana* process (Furnace Method) / in Crucible. While *Shodhit Godanti* was put inside the Crucible it was left 1/3 portion empty on the top. Crucible containing *shodhit Godanti* placed inside the Muffle Furnace. The door of Muffle Furnace then closed tightly. The temperature was recorded from the Traditional Method, which was applied to the Muffle Furnace. Near about 870° c was the average temperature of the Puta. Then, the temperature knob on the Muffle Furnace was set at 870°c and the machine was started. It took 2:45 min. to reach the temperature at 870°c. Then the furnace was kept on for more than 15 to 20 minutes after that it was switched off and allowed it to cool. For the lst *Puta* (Furnace Method), 480gm of *Shuddha Godanti*was used.

After 1st Puta 465 gm of *Godanti Bhasma* was obtained. That means 15 gm of *Godanti Bhasma* lost during 1st *Puta*. For 2nd Puta 465 gm of *Godanti Bhasma* was triturated with *Kumari Swarasa*, prepared *Chakrika* and let them dry and put is given in furnace after 2nd Puta 440 gm of *Godanti Bhasma* was obtained. That means 25 gm of Godanti Bhasma was lost during 2nd Puta.

Temperature Recording

The temperature was recorded after every 10 minutes from ignition of furnace with the help of temperature meter showing on Muffle Furnace. The temperature reached its peak value up to 870°c within 2:45 min. Then the Muffle Furnace was kept on for more 15 to 20 minutes. After that it was switched off. Then it started to fall down gradually. 10-11 hours were required to fall the temperature to come again to initial. *Godanti Bhasma* (by Furnace Method) required 2 *Putas* to pass the *Bhasma pariksha* completely or satisfactory.

Analysis [10-18]

Organoleptic Test

1) Raw (*Ashuddha) Godanti* *Ashuddha Godanti* was White in colour. It has a faint odour. It was tasteless and soft in touch.

2) *Shuddha Godanti* *Shuddha Godanti* was Whitish, Brittle, in colour. It has a faint odour. It was having a liitle bit of *Amla Rasa*. It was soft in touch.

3) *Godanti Bhasma* by Furnace Method *Godanti Bhasma* prepared by Muffle Furnace Method was White in colour just like Moon of *Sharad Rutu* (Autumn season). It has a faint odour. It was tasteless. It was *Mrudu and Snigdha in Sparsha.*

4) *Godnati Bhasma* by Traditional Method *Godanti* prepared by Traditional Method was Whitish Grey. The *Godanti bhasma* has a faint odour. It was tasteless. It was *Mrudu and Snigdha in Sparsha*.

Ayurvediya Bhasma Pariksha These were performed to make sure whether the prepared Godanti Bhasma was of good quality or not. The *parikshas* which have been performed in this study are as follows described in Rasa-Samhitas and the *Bhasma* passed these *parikshas* satisfactorily. Here, *Ayurvediya Bhasma Parikshas* of both methods *Godanti Bhasma* by Muffle Furnace Method and *Godanti Bhasma* by Traditional method Are given combine as both methods passed these *Parikshas* satisfactorily.

Ash Value of Godanti Ash value is direct indicator of organic and inorganic Content of the material. Ash is the residue of the substance remaining after complete incineration. The proportion of ash remains constant for that particular substance. it mainly Contains the inorganic matter of the substance. The acid insoluble ash indicates the residue from ash, which is not dissolved in dil. HCL. It is the measure of inorganic content free from alkali metal; *Bhasma* literally means "Ash" and is a metallic preparation. Being inorganic in nature their Ash value should be high, The *Godanti Bhasma* prepared (Furnace Method) acid insoluble ash 50.09% and of Traditional Method acid insoluble ash is 52.45%, the water-soluble ash of *Godanti Bhasma* (Furnace Method) is 24.70% and that of *Godanti Bhasma* (Traditional Method) is 2.12%.

X - Ray Diffraction (XRD) X ray Diffraction studies help to detect the physical as well as Chemical Structure of various solid compounds. It is a non-destructive method of sample testing. This method is based on scattering of X ray by crystals. By this method one can identify the crystal structures of various solid compounds. X Ray Diffraction methods are generally used for investigating the internal structures. This study was done by using standard data. In the present study, the XRD were carried out for Raw *Godanti, Shuddha Godanti, Godanti Bhasma* prepared by Furnace Method and *Godanti Bhasma* prepared by Traditional Method.

1) Raw Godanti: Raw *Godanti (Ashuddha Godanti*) showed 49.9 Calcium Magnesium Silicide. It contains some impurity peaks. This can be correlated with *Bhautik Ashuddhi* according to Ayurveda. That's why purification of *Godanti* is a must.

2) Shodhit Godanti: Shodhit Godanti showed 76.0 Calcium. Also, it shows there is some peak of impurity. It shows the need of further processing i.e., need of Puta for extraction of all Doshas**.**

3) Godanti Bhasma by Muffle Furnace Method: It showed peaks of Calcium Sulphate. It showed 86.6 calcium.

4) Godanti Bhasma by Traditional Method: It showed 99.3 Calcium Sulphate. No Impurity peak was found

Conclusion

On basis of observation and discussion it is concluded that

- After *Shodhan* Procedure i.e., *Godanti Swedana* in *Nimbu Swaras*, in *Dolayantra* for *Ardhayam* (1 ½ Hour), *Godanti* becomes white brittle.
- The loss during *Shodhana* Procedure is so negligible.
- After the *Shodhana* it was observed that the pH of *Godanti* tends to acidic side.
- pH of raw *Godanti* was 6.60 and that of *Shodhit Godanti* was 6.50.
- *Godanti Bhasma* prepared by Furnace and Traditional method required 2 Putas respectively.
- According to organoleptic test it can be concluded that both the methods achieve expected qualitative parameters as per classical texts.
- *Godanti Bhasma* prepared by Traditional method requires more time, more Laborious.
- *Godanti Bhasma* prepared by Furnace method requires less time, less laborious.
- pH of *Godanti Bhasma* prepared by furnace method was 6.58 and of traditional method was 8.90, thus it can be concluded that, acidic value of the *Shuddha Godanti* was reduced markedly in Traditional method.
- X ray diffraction of *Godanti Bhasma* prepared by Traditional method showed major phase of Calcium Sulphate anhydrite.
- X ray diffraction of *Godanti Bhasma* prepared by Furnace method showed major phase of anhydrite and minor phase of Calcium Catena-Polyphosphate.
- X RF of *Godanti bhasma* prepared by muffle furnace method and Traditional method has same elemental contains.
- After reading of all these reports it can be concluded that *Godanti bhasma* prepared by muffle furnace and prepared by traditional method has same tests results however their therapeutic effect on body may be different as fast acting or slow acting *bhasma* this need to be further studied.
- Preparation of good quality *Bhasma* is the prime aim of this study. Both the *bhasma* are shown near about same analytical results but the *bhasma* prepared by traditional method requires more time and more labour than the *Bhasma* prepared by furnace method.

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