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PHARMASUTICAL STUDY OF GUGGULU (COMMIPHORA MUKUL LINN.) W.S.R. TO ITS VARIOUS SHODHANA PROCEDURES"

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ABSTRACT

Guggulu is the oleoresin of *Commiphora Mukul Linn*., a plant that is native to India. Its extracts include compounds known for their hypolipidemic properties—the Z- and E- isomers of guggulsterone and its related guggulsterols.*Kalpana* is the process through which a substance can be transformed in to the form of medicine according to the need. During preparations of various formulations there are various *Samskaras* which are to be done for potentiating the drug or the formulation. Among all these pharmaceutical processes *Shodhana* is one of them. In our text, for a single drug many process of *Shodhana* in different ways have been mentioned. There are different medias explained in literature for *Shodhana* of *Guggulu.* According to the media of purification the quality and pharmacological properties of *Guggulu* will vary. Depending on the change in properties the therapeutic effect may also vary. Various clinical studies have been carried out, but there is a need to ascertain the changes likely, with difference in the media of *Shodhana*. The present study includes *Shodana* of *Guggulu* as per Classical reference of *Rasendrasarasangraha* where *Shodana* of *Guggulu* is done by *Guduchi Kwatha*, *Triphala Kwatha* and *Godugdha.* Standard Operative Procedure of the process is done in the pharmaceutical study. The analytical study reveals the standards which can be given for *Ashuddha Guggulu* and *Shuddha Guggulu* of various Samples. The differences in the parameters reveal that there are some changes which gives us the idea regarding role of a particular media in purification of a substance, where it adds some properties of the media used.

INTRODUCTION

Guggulu is the oleoresin of *Commiphora Mukul Linn*., a plant that is native to India. Its extracts include compounds known for their hypolipidemic properties—the Z- and E- isomers of guggulsterone and its related guggulsterols (Singh, 2003). *Guggulu* is used as a binding agent and also as a main ingredient in various formulations. Since the evolution of life, diseases are also evolved to destroy it. To protect life, *Ayurveda*, the science of life is being practiced by *Aryans* from *Vedic* period. In the *Vedic* period *Guggulu* was a well-known drug of Indigenous System of Medicine. In *Atharvaveda* it is mentioned to be used both externally and internally. By just consuming the odour of *Guggulu*, it reduces many diseases. Many properties of *Guggulu* are described in our classics. Our ancient *Acharyas* like *Sushruta* describes, the utility and usefulness of *Guggulu* in the treatment of various diseases (Sharma, 2010).

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Kalpana is the process through which a substance can be transformed in to the form of medicine according to the need. The *Aushadha Kalpana* is prepared by different pharmaceutical processing techniques applied to the crude drugs to get the desired therapeutic effect. This processing results in transformation of good pharmacological action to that of substance. These pharmaceutical processes are known as *"SAMSKARAS"*. Before the administration of a drug, it has to be subjected with various types of '*Samskaras'* so as to get the desired therapeutic effect. Crude and without processed drugs are rarely administered in *Ayurveda*, there are many formulations have been described in *Ayurveda* from simple *Churna* of herbal drugs to complex *Sindoor* and *Bhasma*. They all are called as *Aushadhi Kalpana.* Among all these pharmaceutical processes *Shodhana* is one of them. In our text, for a single drug many process of *Shodhana* in different ways have been mentioned. In view of the present trend of commercialization in the preparation and marketing of Ayurvedic medicine and to ensure the interests of the profession and public. It has become our prime duty to

establish the standard pharmaceutical *Shodhana* process as well as to find out the physicochemical changes occurring during the process. A standard is a numerical value, which quantify the parameters and thus denotes quality and purity of material. The numeric value expressed in various metric units of measurements actually gives the quantitative value of the parameter, which is used for making the standard. To make it fit for internal use also, it has to undergo the process of *Shodhana*. *Shodhana* is the process of removal of physical, chemical impurities and potentiating of the drugs (Sri Vagbhatacharya, 1999 and Ayurvedic Formulary of India, 2003). There are different medias explained in literature for *Shodhana* of *Guggulu (*Ayurvedic Pharmacopeia of India, 2003*)*. According to the media of purification the quality and pharmacological properties of *Guggulu* will vary. Depending on the change in properties the therapeutic effect may also vary. Various clinical studies have been carried out, but there is a need to ascertain the changes likely, with difference in the media of *Shodhana*. The present study includes *Shodana* of *Guggulu* as per Classical reference of *Rasendrasarasangraha*[7] and Good Manufacturing Practice (G.M.P.) will be followed for preparing the various medias and *Shodana* of *Guggulu* mentioned below.

Sample	Raw Drug	Media	Process/Apparatus
1	*Guggulu*	*Guduchi Kwatha*	*Swedana/Dola Yantra*
2	*Guggulu*	*Triphala Kwatha*	*Swedana/Dola Yantra*
3	*Guggulu*	*Godugdha*	*Swedana/Dola Yantra*

Aims and objectives

- Identification of *Guggulu* by Classical and Modern methods.
- Phyto-chemical analysis of *Guggulu*, before and after *Shodhana* procedures.
- An attempt will be made to establish Standard Operating Procedure (S.O.P) for *Shodhana* procedures of *Guggulu* by *Guduchi Kwatha, Triphala Kwatha* and *Godugdha*.

Pharmaceutical Syudy

Introduction

Ayurveda is the science of life, which protects and perpetuates the human life in a healthier way. For fulfillment of this purpose "Tetrod" i.e. *Vaidya, Aushadha, Rogi* and *Paricharaka* have been described by our great sages, *Aushadha* (drug) being the primary tool of *Vaidya* for combating various ailments. These *Aushadha* are prepared by different processing techniques applying to the raw drugs to get the desired effect. This processing results in transformation of good pharmacological action to that of substance. These pharmaceutical processes are called "*Samskaras*". Medicaments of any system play a great role in establishment as well as in propagation of the particular system. So enough amount of attention has been provided in allopathic system of medicine is regards of quality production of medicaments. Result is well known that this very modern system of medicine has originated in Europe but at present it is accepted across the globe. But unfortunately in spite of the fact that our system of medicine is much more older in origin as well as in practice in comparison to present other systems of medicine, still we are not fully accepted even in this subcontinent. Many reasons are behind it. One of them is our incapability to produce quality drugs. After considering the vital importance of this fact concern *Ayurveda* is now orienting its resources for the advancement of this ignored pharmaceutical science. Behind all the pharmaceutical procedures, *Shodhana* has its prime importance, because it is the *Shodhana* by which we can use all the substances as medicine from herbal to mineral in origin, even though they are having many toxic effects on human body. Shodana is the process of removal of physical, chemical impurities and potentiating of the drugs[3,4] By the process of *Shodhana*, the virtues of properties of *Shodhana Dravyas* are inherited into a substance. Standardization of *Ayurvedic* formulations and their manufacturing processes are the need of present hour. So one can check adulteration, identify the spurious material, improve the quality of drugs and maintain the uniformity of the products in different batches. In this way only *Ayurvedic* drugs can be made acceptable worldwide. There are various pharmaceutical processes which have been described for *Shodhana* such as *Swedana, Nirvapa, Avapa, Bharjana, Galana, Shoshana, Patana*, *Bhavana* etc. These are not merely the chemical purification but in a nutshell it can be said that to make substances bio-assimilable, they are subjected to *Shodhana*, the specific process of the addition and separation according to the need of our body. So it has become our prime duty to establish the proper *Shodhana* method in the scientific way in regards to get specific therapeutic effect and get maximum yield as well fulfilling all necessary parameters to make that substance best therapeutic. In the context of present study *Guggulu Shodhana* have been performed by *Guduchi Kwatha, Triphala Kwatha* and *Godugdha* as mentioned in Rasendrasarasangraha[7] and also in AFI[6] Practical study was carried out under the supervision of our Guide in Dept. of Rasashastra & Bhaishajya Kalpana, N.K.J.A.M.C. & P.G. Centre, Gumpa, Bidar.

Practical study is comprised of

Preparation of *Guduchi Kwatha* Practical 1.
Guggulu Shodhana by *Guduchi Kwatha* Practical 2.
Preparation of *Triphala Kwatha* Practical 3.
Guggulu Shodhana by *Triphala Kwatha* Practical 4.
Guggulu Shodhana by *Godugdha*. Practical 5.

Name of the practical: Preparation of G*uduchi Kwatha*

Practical 1.

Ref.: General method of *Kwatha* preparation

Date of Starting : 1st Day
Date of Completion : 2nd Day

Material Required: Stainless steel vessels, Weighing Balance, Gas stove, Clean cotton cloth, Measuring jar, mercury thermometer, Spatula etc.

Ingredients

1) *Guduchi Yava Kuta Churna* - 01 kg.
2) Water - 16 ltr.

Procedure

- *Guduchi Yavakuta Churna* was kept soaked in water for overnight.
- Next day it was boiled on slow heat without covering its mouth.

- Water was evaporated slowly and reduced till the quantity became ¼th.
- It was filtered with clean cotton cloth and filtered liquid was collected as *Guduchi Kwatha.*

Observations

- *Yavakuta Churna* of *Guduchi* became soft when kept soaked for overnight.
- Water containing *Yavakuta Churna* of *Guduchi* is boiled at 98^0 C.
- During the preparation of *Guduchi Kwatha* little frothing was observed.
- It took approximately 6 hours heating to reduce the water to ¼th quantity.
- The color of prepared *Kwatha* was dark greenish brown.

Precautions

- *Yavakuta Guduchi Churna* should be taken for *Kwatha* preparation.
- Boiling should be done on slow heat.
- Utensils, vessels and filtering cloth should be clean.
- Stirring should be carried out regularly.

Result

- Final quantity of *Guduchi Kwatha* obtained is – 4 ltr.
- Colour : Dark Greenish brown
- Taste : *Kashaya, Tikta*

Name of Practical : *Guggulu Shodhana* by *Guduchi Kwatha*[7]

Practical 2

Ref. : Rasendrasarasangraha, 1/402, 98pp.

Date of Starting : 1st Day
Date of Completion : 5th Day

Material Required: Stainless Steel Vessel, Gas Stove, Water Bath, Spatula, Weighing Balance, Measuring Jar, Clean Cotton Cloth, Mercury Thermometer etc.

Ingredients :

1. *Ashuddha Guggulu* : 01 kg.
2. *Guduchi Kwatha* : 4 ltr.

Procedure

- Physical impurities like stone, sand, wood, bark pieces etc. were manually cleaned.
- *Guduchi Kwatha* was taken in a clean vessel and *Ashuddha Guggulu* was added in it and stirred well and heated for 2-3 hours, then it was macerated well and rubbed with hands.
- When the complete *Guggulu* dissolved in *Kwatha*, it was filtration by cotton cloth.
- After filtration the residue in the cloth was discarded.
- Now the filtered liquid was heated on gas stove on *Madhyamagni* with continuous stirring. (Gas knob was set on sim) as water got evaporated its consistency increased gradually.
- When it started to become *Ghana (Avalehavat)*, the soft mass was transferred in to a wide stainless steel plate smeared with *Ghrita* and was kept for drying.
- After completely drying the *Shuddha Guggulu* was collected.
- Light brownish black flakes of *Shuddha Guggulu* were collected and preserved.

Observations

- The color of *Ashuddha Guggulu* was brownish black with little shining and having good odour.
- After dissolving *Guggulu* in *Guduchi Kwatha* the color of the solution became reddish brown.
- After 3-4 hours almost all *Guggulu* gets dissolved and the solution became sticky.
- During heating little aromatic smell of *Guggulu* was found.
- Gradually consistency was increased and color darkened to light brownish black
- *Guggulu* was quite sticky during handling.

Temperature and Duration

Day	Heating Device	Duration	Temp. ^{0}C
1st	Gas Stove	6.40 hours	$62^0 – 68^0$C
2nd to 5th	Sun Shade	6 hours/day	36^0 -- 38^0C

Results

Ashuddha Guggulu : 1 kg
Guduchi Kwatha : 4 ltr.
Shuddha Guggulu obtained : 670 gms
Total duration for Shodhana process : 5 days (Approx.)

Precautions

- Utensils and vessels should be clean and disinfected.
- *Ashuddha Guggulu* should be broken in small pieces before subjecting to the process.
- Heating should be controlled and temperature should be maintained about 65-70^0C inside the vessel.
- Temperature should be checked time to time with the help of mercuric thermometer.
- Continuous stirring should be done to avoid sticking of *Guggulu* to the vessel.
- When *Guggulu* turned into semi-solid mass it was transferred to a clean *Ghrita* coated stainless steel vessel. (Figure-5)

Name of the practical: Preparation of *Triphala Kwatha*

Practical 3

Ref.: General method of *Kwatha* preparation

Date of Starting : 1st Day
Date of Completion : 2nd Day

Material Required: Stainless steel vessels, Weighing Balance, Gas stove, Clean cotton cloth, Measuring jar, Mercury thermometer, Spatula etc.




Fig. 1. Guggulu Plant **Fig. 2. Guggulu Plant and Resin of Guggulu** **Fig. 3.**

Fig. 4. Guggulu Plant Guggulu Plant and Resin of Guggulu

Ingredients :

1) *Triphala Yava Kuta Churna* - 01 kg.
2) Water - 16 ltr.

Procedure

- *Triphala Yavakuta Churna* was kept soaked in water for overnight.
- Next day it was boiled on slow heat without covering its mouth.
- Water was evaporated slowly and reduced till the quantity became ¼th.
- It was filtered with clean cotton cloth and filtered liquid was collected as *Triphala Kwatha*.

Observations

- *Yavakuta Churna* of *Triphala* became soft when kept soaked for overnight.
- Water containing *Yavakuta Churna* of *Triphala* was boiled at 98^0 C.
- During the preparation of *Triphala Kwatha* little frothing was observed.
- It took approximately 6 hours heating to reduce the water to ¼th quantity.
- The color of prepared *Kwatha* was dark brownish black.

Precautions

- *Yavakuta Triphala Churna* should be taken for *Kwatha* preparation.
- Boiling should be done on slow heat.
- Utensils, vessels and filtering cloth should be clean.
- Stirring should be carried out regularly.

Result

- Final quantity of *Triphala Kwatha* obtained is – 4 ltr.
- Colour : Dark brownish black
- Taste : *Kashaya Pradhana Tikta, Katu, Amla, Madhura*

Name of Practical: *Guggulu Shodhana* by *Triphala Kwatha*[7]

Practical 4

Ref. : Rasendrasarasangraha, 1/402, 98pp.

Date of Starting : 1st Day
Date of Completion : 5th Day

Material Required : Stainless Steel Vessel, Gas Stove, Water Bath, Spatula, Weighing Balance, Measuring Jar, Clean Cotton Cloth, Mercury Thermometer etc.

Ingredients :

1. *Ashuddha Guggulu* : 01 kg.
2. *Triphala Kwatha* : 4 ltr.

Procedure :

- Physical impurities like stone, sand, wood, bark pieces etc. were manually cleaned.
- *Triphala Kwatha* was taken in a clean vessel and *Ashuddha Guggulu* was added in it and stirred well and heated for 2-3 hours, then it was macerated well and rubbed with hands.
- When the complete *Guggulu* dissolved in *Kwatha*, it was filtration by cotton cloth.
- After filtration the residue in the cloth was discarded.
- Now the filtered liquid was heated on gas stove on *Madhyamagni* with continuous stirring. (Gas knob was set on sim) as water got evaporated its consistency increased gradually.
- When it started to become *Ghana (Avalehavat)*, the soft mass was transferred in to a wide stainless steel plate smeared with *Ghrita* and was kept for drying.
- After completely drying the *Shuddha Guggulu* was collected.

- Light brownish black flakes of *Shuddha Guggulu* were collected and preserved.

Observations

- The color of *Ashuddha Guggulu* was brownish black with little shining and having good odour.
- After dissolving *Guggulu* in *Triphala Kwatha* the color of the solution became brownish black.
- After 3-4 hours almost all *Guggulu* gets dissolved and the solution became sticky.
- During heating little aromatic smell of *Guggulu* was found.
- Gradually consistency was increased and color turned to dark brownish black
- *Guggulu* was quite sticky during handling.

Temperature and Duration

Day	Heating Device	Duration	Temp. ^{0}C
1st	Gas Stove	6.40 hours	$62^0 – 68^0$C
2nd to 5th	Sun Shade	6 hours/day	36^0 -- 38^0C

Results

Ashuddha Guggulu : 01 kg
Triphala Kwatha : 4 ltr.
Shuddha Guggulu obtained : 690 gms

Total duration for Shodhana process : 5 days (Approx.)
Precautions:

- Utensils and vessels should be clean and disinfected.
- *Ashuddha Guggulu* should be broken in small pieces before subjecting to the process.
- Heating should be controlled and temperature should be maintained about 65-70^{0}C inside the vessel.
- Temperature should be checked time to time with the help of mercuric thermometer.
- Continuous stirring should be done to avoid sticking of *Guggulu* to the vessel.
- When *Guggulu* turned into semi-solid mass it was transferred to a clean *Ghrita* coated stainless steel vessel (Figure 6).

Name of Practical : *Guggulu Shodhana* by *Godugdha*[7]

Practical 5.

Ref. : Rasendrasarasangraha, 1/402, 98pp.
Date of Starting : 1st Day
Date of Completion : 6th Day

Material Required : Stainless Steel Vessel, Gas Stove, Water Bath, Spatula, Weighing Balance, Measuring Jar, Clean Cotton Cloth, Mercury Thermometer etc.

Ingredients

1. *Ashuddha Guggulu* : 01 kg.
2. *Godugdha* : 4 ltr.

Procedure

- Physical impurities like stone, sand, wood, bark pieces etc. were manually cleaned.
- *Godugdha* was taken in a clean vessel and was boiled. Then *Ashuddha Guggulu* was added in it and stirred well and heated for 2-3 hours, then it was macerated well and rubbed with hands.
- When the complete *Guggulu* dissolved in *Godugdha*, it was filtration by cotton cloth.
- After filtration the residue in the cloth was discarded.
- Now the filtered liquid was heated on gas stove on *Madhyamagni* with continuous stirring. (Gas knob was set on sim) as water got evaporated its consistency increased gradually.
- When it started to become *Ghana (Avalehavat)*, the soft mass was transferred in to a wide stainless steel plate smeared with *Ghrita* and was kept for drying.
- After completely drying the *Shuddha Guggulu* was collected.
- Light chocolaty brownish flakes of *Shuddha Guggulu* was collected and preserved.

Observations

- The color of *Ashuddha Guggulu* was brownish black with little shining and having good odour.
- After dissolving *Guggulu* in *Godugdha* the color of the solution became light chocolaty brown.
- After 3-4 hours almost all *Guggulu* gets dissolved and the solution became sticky.
- During heating little aromatic smell of *Guggulu* was found.
- Gradually consistency was increased and color turned to light chocolaty brown
- *Guggulu* was having more moisture then the other two types of *Shodhana*.
- *Guggulu* was quite sticky during handling.

Temperature and Duration

Day	Heating Device	Duration	Temp. ^{0}C
1st	Gas Stove	6.40 hours	$62^0 – 68^0$C
2nd to 6th	Sun Shade	6 hours/day	36^0 -- 38^0C

Results

Ashuddha Guggulu : 01 kg
Triphala Kwatha : 4 ltr.
Shuddha Guggulu obtained : 710 gms

Total duration for Shodhana process : 6 days (Approx.)
Precautions

- Utensils and vessels should be clean and disinfected.
- *Ashuddha Guggulu* should be broken in small pieces before subjecting to the process.
- Heating should be controlled and temperature should be maintained about 65-70^{0}C inside the vessel.
- Temperature should be checked time to time with the help of mercuric thermometer.
- Continuous stirring should be done to avoid sticking of *Guggulu* to the vessel.
- When *Guggulu* turned into semi-solid mass it was transferred to a clean *Ghrita* coated stainless steel vessel. (Figure-7)



Fig. 5. Shuddha Guggulu by Guduchi Kwatha Fig. 5. Shuddha Guggulu by Triphala Kwatha Fig. 6. Guggulu by Godugdha

Pharmaceutical Study

- *Aushadha* is a primary tool of *Vaidya* for combating various ailments. These *Aushadha* are prepared by different processing techniques applying to the raw drugs to get the desired effect. This processing results in transformation of good pharmacological action to that of substance. These pharmaceutical processes are called "*Samskaras*".
- Behind all the pharmaceutical procedures, *Shodhana* has its prime importance, because it is the *Shodhana* by which we can use all the substances as medicine from herbal to mineral in origin, even though they are having many toxic effects on human body. Shodana is the process of removal of physical, chemical impurities and potentiating of the drugs. By the process of *Shodhana*, the virtues of properties of *Shodhana Dravyas* are inherited into a substance.
- By the critical review of different classical texts it seems that first time the written reference for the *Shodhana* process was found in *Anand Kandam (Kriya karana Vishranti Prathamollas 322-323*).
- In the present study *Guggulu Shodhana* have been performed by *Guduchi Kwatha, Triphala Kwatha* and *Godugdha* as mentioned in Rasendrasarasangraha and also in AFI. Practical study was carried out under the supervision of our Guide in Dept. of Rasashastra & Bhaishajya Kalpana, N.K.J.A.M.C. & P.G. Centre, Gumpa, Bidar.
- Practical study was done in 5 steps as
- Preparation of *Guduchi Kwatha* Practical 1.
- *Guggulu Shodhana* by *Guduchi Kwatha* Practical 2.
- Preparation of *Triphala Kwatha* Practical 3.
- *Guggulu Shodhana* by *Triphala Kwatha* Practical 4.
- *Guggulu Shodhana* by *Godugdha* Practical 5

Practical 1. Preparation of *Guduchi Kwatha*

For preparation of Guduchi Kwatha Stainless steel vessels, Weighing Balance, Gas stove, Clean cotton cloth, Measuring jar, mercury thermometer, Spatula etc. were used. *Guduchi Yava Kuta Churna* 01 kg. and water of about 16 ltr. was used. *Guduchi Yavakuta Churna* was kept soaked in water for overnight. Due to soaking the *Yavakuta Churna* was softened which facilitated better extraction of active components. Then it was boiled on slow heat without covering its mouth with lid. Water was evaporated slowly and reduced till the quantity became ¼th at the temperature of 98^0c. It was filtered with clean cotton cloth and filtered liquid was collected as *Guduchi Kwatha.* The color of prepared *Kwatha* was dark greenish brown. Final quantity of *Guduchi Kwatha* obtained was 4 ltr. It was having taste of *Kashaya, Tikta Rasa.*

Practical 2. *Guggulu Shodhana* by *Guduchi Kwatha*

For this practical clean and disinfected Stainless Steel Vessel, Gas Stove, Water Bath, Spatula, Weighing Balance, Measuring Jar, Clean Cotton Cloth, Mercury Thermometer etc. were used. *Ashuddha Guggulu* of 01 kg. and *Guduchi Kwatha* of 4 ltr. were used. Physical impurities like stone, sand, wood, bark pieces etc. were manually cleaned from *Ashuddha Guggulu. Guduchi Kwatha* was taken in a clean vessel and *Ashuddha Guggulu* was added in it and stirred well and heated for 2-3 hours, then it was macerated well and rubbed with hands. When the complete *Guggulu* dissolved in *Kwatha*, it was filtration by cotton cloth. After filtration the residue in the cloth was discarded. Now the filtered liquid was heated on gas stove on *Madhyamagni* with continuous stirring. (Gas knob was set on sim) as water got evaporated its consistency increased gradually. When it started to become *Ghana (Avalehavat)*, the soft mass was transferred in to a wide stainless steel plate smeared with *Ghrita* and was kept for drying. After completely drying the *Shuddha Guggulu* was collected. For the present study, common process of *Guggulu Shodhana,* which is in practice at commercial level was adopted, instead of *Pottali, Shodhana* method as per the opinion of the experts of subject. There are a lot of problem with *Pottali Shodhana* method, first of all the problem is with the quantity of *Shodhana* media as mentioned that make the *Pottali* of *Ashuddha Guggulu* and immersed completely in to liquid, then heat it. Water-soluble part of *Guggulu* passes from *Pottali* to the liquid, but side by side because of evaporation, quantity of liquid media gradually decreases. As a result one stage will come when *Pottali* will not be remained immersed completely in to the liquid, so more *Shodhana* media or water will be needed for the complete dipping of *Pottali* into the liquid. Because of this phenomenon any standard quantity of *Shodhana* media can not be standardized for the *Shodhana* process. Climatic conditions also affect the evaporation of any liquid so again it becomes difficult to bring out any kind of similarity in quantity of *Shodhana* media. Finally all liquid soluble part should pass from *Pottali* to liquid media then continuous heating of this *Guggulu* containing liquid will give the *Ghana* of *Shuddha Guggulu*. By this *Pottali Shodhana* method *Shodhana* of *Guggulu* can not be performed on large scale and the quantity of *Shodhana* media cannot be standardized.

The present procedure adapted for *Shodhana* of *Guggulu* therefore appears to be a sensible way of purifying *Guggulu*, because in the process toxic insoluble part is removed only soluble part of *Guggulu* is taken. The color of *Ashuddha Guggulu* was brownish black with little shining and having good odour. After dissolving *Guggulu* in *Guduchi Kwatha* the color of the solution became reddish brown. After 3-4 hours almost all *Guggulu* gets dissolved and the solution became

sticky. Heating should be controlled and temperature should be maintained about 65-70^{0}C inside the vessel. During heating little aromatic smell of *Guggulu* was found. Gradually consistency was increased and color darkened to light brownish black. *Guggulu* was quite sticky during handling. 670gms of *Shuddha Guggulu* was obtained. The duration for preparation was 5 days.

Practical 3. Preparation of *Triphala Kwatha*

For preparing *Triphala Kwatha* general method of preparation of *Kwatha* was used. The utensils used were Stainless steel vessels, Weighing Balance, Gas stove, Clean cotton cloth, Measuring jar, Mercury thermometer, Spatula etc. *Triphala Yava Kuta Churna* of about 01 kg. and water of about 16 ltr. was taken and soaked in water for overnight. *Yavakuta Churna* of *Triphala* became soft when kept soaked for overnight Next day it was boiled on slow heat at 98^{0}c without covering its mouth. During the preparation of *Triphala Kwatha* little frothing was observed Water was evaporated slowly and reduced till the quantity became ¼th. It was filtered with clean cotton cloth and filtered liquid was collected as *Triphala Kwatha*. It measured about 4 litre. It took approximately 6 hours heating to reduce the water to ¼th quantity. The color of prepared *Kwatha* was dark brownish black and *Kashaya Pradhana Tikta, Katu, Amla, Madhura Rasa.*

Practical 4. *Guggulu Shodhana* by *Triphala Kwatha*

For *Guggulu Shodhana* by *Triphala Kwatha* the utensils used are Stainless Steel Vessel, Gas Stove, Water Bath, Spatula, Weighing Balance, Measuring Jar, Clean Cotton Cloth, Mercury Thermometer etc. Physical impurities like stone, sand, wood, bark pieces etc. were manually cleaned from *Ashuddha Guggulu. Triphala Kwatha* of about 4 litre was taken in a clean vessel and *Ashuddha Guggulu* of about 1 Kg. was added in it and stirred well and heated for 2-3 hours, then it was macerated well and rubbed with hands. When the complete *Guggulu* dissolved in *Kwatha*, it was filtration by cotton cloth. After filtration the residue in the cloth was discarded. Now the filtered liquid was heated on gas stove on *Madhyamagni* with continuous stirring. (Gas knob was set on sim) as water got evaporated its consistency increased gradually. When it started to become *Ghana (Avalehavat)*, the soft mass was transferred in to a wide stainless steel plate smeared with *Ghrita* and was kept for drying. After completely drying the *Shuddha Guggulu* was collected. 690gms of *Shuddha Guggulu* was available which was dark brownish black in color. The duration required was 5 days.

Practical 5. *Guggulu Shodhana* by *Godugdha*

For *Guggulu Shodhana* by *Godugdha* the utensils used were Stainless Steel Vessel, Gas Stove, Water Bath, Spatula, Weighing Balance, Measuring Jar, Clean Cotton Cloth, Mercury Thermometer etc. Physical impurities like stone, sand, wood, bark pieces etc. were manually cleaned. *Godugdha* of about 4 litre was taken in a clean vessel and was boiled. Then *Ashuddha Guggulu* of about 1Kg. was added in it and stirred well and heated for 2-3 hours, then it was macerated well and rubbed with hands. When the complete *Guggulu* dissolved in *Godugdha*, it was filtration by cotton cloth. After filtration the residue in the cloth was discarded. Now the filtered liquid was heated on gas stove on *Madhyamagni* with continuous stirring. (Gas knob was set on sim) as water got evaporated its consistency increased gradually. When it started to become *Ghana (Avalehavat)*, the soft mass was transferred in to a wide stainless steel plate smeared with *Ghrita* and was kept for drying. After completely drying the *Shuddha Guggulu* was collected. Light chocolaty brownish flakes of *Shuddha Guggulu* was collected and preserved.710gms of *Shuddha Guggulu* was available. The duration required was about 6 days.

REFERENCES

Ayurvedic Formulary of India, Part 1, Part B, Published by G. O. I., Ministry of Health and Family Welfare, 2003, 19pp.

Ayurvedic Formulary of India, Part 1, Part B, Published by G. O. I., Ministry of Health and Family Welfare, 2003, 40-41pp.

Ayurvedic Pharmacopeia of India, Part 1, Second Edition, Published by G. O. I., Ministry of Health and Family Welfare, 2003, 203pp.

Charaka Samhita Ayurveda Dipika Commentary, Chaukhambha Surbharti Prakashan, Varanasi, Reprint: 2009

Dictionary Of Military And Associated Terms. US Department Of Defence 2005.

Gopalakrishna Bhat, Rasendrasarasangraha, Rasavidyotini Hindi Vyakhya By Indradev Tripathi, Third Edition, Chaukhamba Orientalia, Varanasi, 2003, 1/402, 98pp.

Sharma P.V. Susruta Samhita. 1st ed. Varanasi: chaukhambha visvabharati; Vol I 2010, 170pp.

Singh B B, Mishra L C, Vinjamury S P, Aquilina N, Singh V J, Shepard N. The effectiveness of Commiphora mukul for osteoarthritis of the knee: an outcomes study. Altern Ther Health Med.Vol 9(3), 2003, 74pp.

Sri Vagbhatacharya, Rasa Ratna Samucchaya, Hindi Vyakhya By Pandit Dharmananda Sharma, Motilal Banarasidas, Varanasi, Second Edition,1999, 3/75, 49pp.

Stephen Laurence and Eric Margolis. "Concepts And Cognitive Science", In Concepts: Core Readings, MIT Press, 1999, 3-81 pp.

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