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Research Article

A PHARMACEUTICO-ANALYTICAL STUDY OF *AMRITADYA GUGGULU*

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KEYWORDS: *Shodhana, guggulu, Amritadya Guggulu,* Moisture content, Physical and Chemical properties.

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ABSTRACT

Aushadha Kalpana is prepared by different pharmaceutical processing applied to the crude drugs to get the desired therapeutic effects. *Guggulu kalpana* is one of them. *Guggulu* is the gummy resin of the Indian plant bdellium i.e. *Commiphora mukul. Guggulu* is always used after *Shodhana* to remove its impurities. So the process of *Shodhana* becomes imperative in different media. In addition to it, *Shodhana* of *Guggulu* in different media brings specific properties to *Guggulu*. Ayurvedic medicines are gaining increase in popularity worldwide for the treatment of various diseases in recent times. In the present study, *Amritadya guggulu,* one of the *Guggulu* preparation mentioned in *Pidika, Bhagandara* and *Sthaulya* like conditions in *Chakkradatta*, was prepared and analysed so as to prove the safety and efficacy of the drug. **Aims and objectives**: To develop standard operative procedure for preparation of genuine drug and to analyze the safety and purity of the drug. **Material and Methods**: *Amritadya guggulu* was prepared as per classical texts and analysed by using different parameters like organoleptic properties, physicochemical properties, TLC etc. **Discussion and Conclusion**: 50% weight loss was observed. The weight loss was due to removal of impurities present in the *Guggulu* and handling loss. Presence of low acid insoluble ash (1.08%) determines the presence of low adherent dirt as well as sand particles. Presence of low moisture content (loss on drying 6.2%) decreases decomposition and enhances the shelf life and therapeutic value of the drug. Hence it can be concluded that the pharmaceutical and analytical study confirm the authenticity and quality of the drug.

INTRODUCTION

Guggulu kalpana comes under *Vati kalpana*[1] where herbal drugs are mixed with *Guggulu* in the powder form. *Guggulu* is an amorphous translucent, solid adhesive, oleo-gum-resin produced by the process of gummosis from its plant. Many properties of *Guggulu* are described in our classics. Acharya Charaka included *Guggulu* in *Sangya Sthapana Mahakashaya*[2] and in *"Kashaya Skandha"*[3]. *Maharishi Sushruta* has described *Guggulu* in the list of seven most important drugs for the treatment of *Sthaulya*[4]. He has prescribed *Guggulu* with *Go-Mutra* in condition of vitiated *Vata* with *Medodhatu* dominated *Kapha dosha*.[5] *Amritadya guggulu* is a well known drug of Ayurveda. *Acharya Chakkradatta* has explained *Amritadya guggulu* in *Medo Roga chikitsa*[6]. To make *Guggulu* fit for internal use, it has to undergo the process of *Shodhana,* which is done to remove the impurities as well as to increase the therapeutic properties. *Guggulu kalpana* can be prepared by making *Paka* (heating) as well as without *Paka* (hammering) method. It is essential to standardize the drug and examine the quality and safety of the drug. Therefore an attempt was made in the present study to establish standard operative procedure for preparation of *Amritadya Guggulu.* "Without *Paka*"[7] method was used for preparation of *Guggulu*. Success of pharmaceutical study can be

confirmed through assessing effectiveness in clinical study as well as results of analytical study. Analytical study provides idea about quality and safety of finished product. Without analytical study of the drug, the research related to medicinal field is incomplete. So for that purpose some analytical tests were performed and their results were compared with standard parameters.

MATERIAL AND METHODS

Pharmaceutical Processing of *Amritadya Guggulu*

It was done in four steps

1. Preparation of *Trifala Kwatha*
2. *Guggulu Shodhana*
3. Powdering of the other ingredients of *Amritadya Guggulu*
4. Pounding of *Shudha Guggulu* with the powder of rest of the ingredients.

Preparation of *Trifala Kwatha*[8]

Fruit pericarp of *Amalaki, Haritaki* and *Bibhitaka (*200g each) were taken. They were screened, washed, dried properly and crushed into coarse powder. Then 4.8L of water was added to them in a SS vessel and kept overnight, opting general rules of making decoction. Next day, decoction was prepared by heating and reducing the material to 1.2L (1/4th of its original volume). The decoction was then filtered and kept in a stainless steel vessel for *Guggulu Shodhana*.

Guggulu Shodhana[9]

All the physical impurities in the *Ashuddha Guggulu* like stone, wood, bark particles etc., were picked up manually. It was then broken into small pieces. Then it was bundled in a piece of cotton cloth and kept in *Dola Yantra* containing *Trifala Kwatha* and allowed to stand for 2-3 hours on low flame. Then it was macerated well with laddle. When most of *Guggulu* was dissolved into *Trifala Kwatha*, bundle of cotton cloth was put outside the *Kwatha* and residue in cloth was discarded. Now the liquid was heated on LPG Stove on low flame with continuous stirring. As water got evaporated, its consistency increased gradually. When it started to become *Ghana (Avalehavata*), the vessel was transferred on water bath to avoid the burning of *Guggulu* at the bottom of vessel. Then the *Guggulu* was put in the *Ghrita* smeared tray and it was kept in sunlight for drying. After drying, it was put out of the tray and stored in an air tight plastic.

Powdering of the other ingredients of *Amritadya Guggulu*

Table 1: Ingredients of *Amritadya Guggulu*

Sr. No.	Name	Botanical name	Family	Part Used	Proportion
1.	*Guduchi*	*Tinospera cordifolia*	*Menispermacease*	Stem	1 part
2.	*Ela*	*Elettaria cardamomum*	*Zingiberaceae*	Seeds	2 parts
3.	*Vidanga*	*Embelia ribes*	*Myrcinaceaee*	Fruit	3 parts
4.	*Kutaja*	*Holarrhena antidysenterica*	*Apocynaceae*	Bark	4 parts
5.	*Bibhitaka*	*Terminalia belerica*	*Combretaceae*	Fruit Pericarp	5 parts
6.	*Amalaki*	*Emblica officinalis*	*Euphorbiaceae*	Fruit Pericarp	6 parts
7.	*Haritaki*	*Terminalia chebula*	*Combretacease*	Fruit Pericarp	7 parts
8.	*Shudha Guggulu*	*Commifora mukul*	*Burseraceae*	Exudates	8 parts

1. The herbal ingredients of *Amritadya Guggulu* were screened for physical impurities like stone, wood, bark particles or any other foreign particle.
2. After that, each ingredient was separately washed with R.O. water and dried in direct sunlight.
3. After proper drying, each ingredient was separately grinded in the grinding machine and passed through Sieve No. 85.
4. Then the required amount of the powder of each ingredient was taken in SS tray and mixed uniformly.
5. This mixture of drugs was retained for the further processing.

Pounding of *Shudha Guggulu* with the powder of rest of the ingredients

1. A weighed amount of *Shuddha Guggulu* (i.e. 112g) was taken in a Mortar.
2. It was crushed into small pieces with the help of pestle.
3. Then a small amount of R.O. water was sprinkled over *Guggulu* and pounding was done with help of pestle.
4. After that, a small amount of mixture of herbal drugs was sprinkled over *Guggulu* and pounding was continued.

5. In the same way, all the mixture of herbal drugs was mixed with *Guggulu* with continuous pounding.
6. A little amount of *Go-ghrita* was also added during pounding.
7. When approximate 1.25 Lac pounding was completed, then the whole mass was broken into small pieces and put into SS Tray.
8. This tray was kept into Hot air oven at 35-40^{0}C temperature for about 8 hrs.
9. After proper drying of mass, granulation was done.

These obtained black granules of *Amritadya guggulu* were stored in air tight container

Guggulu Shodhana



Ashudha Guggulu Shodhana in *Trifala Kwatha Shudha Guggulu*

***Amritadya Guggulu* Preparation**



Powder of other ingredients pounding of *Guggulu* with *Amritadya guggulu* granules powdered ingredients

Observations and Results

Table 2: Observations of *Trifala Kwatha*

Volume	Colour	Taste	Smell	pH
1.2 L	Dark brown	Astringent	Characteristic	3

Table 3: Result of *Guggulu Shodhana*

Shudha guggulu obtained	250g
Weight loss	50%
Colour	Brownish black
Taste	Bitter
Odour	Characteristic

Table 4: Quantitative Changes during the Processing of Herbal Drugs

Sr. No.	Name of the drug	Wt of Drug taken	Wt of drug after screening, washing and drying	Wt after grinding and sieving	Wt loss
1.	*Guduchi*	250gm	90gm	50gm	40gm
2.	*Ela*	240gm	240gm	168gm	72gm
3.	*Vidanga*	100gm	90gm	66gm	24gm
4.	*Kutaj*	100gm	70gm	60gm	10gm
5.	*Bibhitaka*	150gm	100gm	82gm	18gm
6.	*Amalaki*	200gm	120gm	90gm	30gm
7.	*Haritaki*	200gm	130gm	100gm	30gm

Table5: Amount of ingredients taken for the preparation of *Amritadya Guggulu*

Sr.No.	Name	Amount taken
1.	*Guduchi*	14gm
2.	*Laghu Ela*	28gm
3.	*Vidanga*	42gm
4.	*Kutaja*	56gm
5.	*Bibhitaka*	70gm
6.	*Amalaki*	84gm
7.	*Haritaki*	98gm
8.	*Shudha Guggulu*	112gm

Table 6: Result of Prepared *Amritadya Guggulu*

End Product	*Amritadya guggulu*
Weight	450g
Colour	Brownish black
Odour	Characteristic aromatic odour
Taste	Bitter

Analytical Study of *Amritadya Guggulu*

Analysis of prepared *Amritadya Guggulu* was done at D.T.L.RIISM Joginder nagar on the basis of following two evaluation parameters:

1. Macroscopic analysis
2. Physico-chemical analysis

Table 7: Result of Macroscopic Analysis of *Amritadya Guggulu*

S.No.	Parameters	Result
1.	Appearance	Powder
2.	Colour	Black
3.	Odour	Characteristic
4.	Taste	Astrigent, Bitter and Pungent
5.	pH	3.40

Table 8: Result of Physico-Chemical Analysis of *Amritadya Guggulu*

S.No.	Parameters	Results
1.	Loss on drying[10]	06.12 percent
2.	Total Solids	93.88 percent
3.	Total Ash[11]	06.03 percent
4.	Acid Insoluble Ash[12]	01.08 percent
5.	Water Soluble Extractive[13]	38.23 percent
6.	Methanol Soluble Extractive[14]	29.48 percent
7.	Identification Test	Positive test for Tannins
8	Thin Layer Chromatography[15]	Showed the presence of *Vidanga, Laghu ela, Guggulu, Kutaja, Guduchi, Haritaki, Bibhitaka, Amlaki*

(Analytical Report no. 1: Showing the Analysis of *Amritadya Guggulu* with Protocols of Test Applied as per ASU Pharmacopoeia/other specific Standards done at D.T.L.RIISM Jogindernagar)

DISCUSSION

250gm of *Shudha Guggulu* was obtained. 50% weight loss was observed. The weight loss was due to removal of impurities present in the *Guggulu* and handling loss. Total 616gm of powder was obtained from 1240gm of raw herbal ingredients. The observed weight loss was due to removal of impurities by screening, washing, drying and because of removal of roughage after powdering. Total outcome of *Amritadya Guggulu* preparation was 450gm from total 504gm of material taken. The loss in weight was due to evaporation of water content and handling loss during pounding process. A little amount of *Go-ghrita* was also added during pounding. The purpose of addition of *Go-ghrita* is that it may help to avoid the stickiness of *Guggulu* with the container during hammering. The result of analysis of *Amritadya Guggulu* showed that it was black in colour having characteristic odour and bitter in taste. The values of moisture content, total solids, total ash, acid insoluble ash, water soluble extractive and methanol soluble extractive were as per standards of API. The identification test was positive for Tannins. Thin layer chromatography showed the presence of *Guduchi*, *Guggulu, Kutaja, Vidanga, Laghu ela, Amlaki, Haritaki* and *Bibhitaka*. Presence of low acid insoluble ash (1.08%) determines the presence of low adherent dirt as well as sand particles. Presence of low moisture content (loss on drying 6.2%) decreases decomposition and enhances the shelf life and therapeutic value of the drug.

CONCLUSION

So with the present study it can be concluded that the pharmaceutical and analytical study confirm the authenticity and quality of the drug and can be used as reference standard for further studies.

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