



## PHYSICOCHEMICAL & PHYTOCHEMICAL EVALUATION OF GOKSHURADI GUGGULU - AN AYURVEDIC HERBAL FORMULATION

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### ABSTRACT

**Introduction:** *Gokshuradi Guggulu* a very popular herbal Ayurvedic formulation is recommended in the management of many diseases. Along with herbal drug industry demand of herbal formulations are increasing day by day. Many Ayurvedic pharmacies are preparing these kind of formulations on large scale. Therefore the need to follow some quality parameters in large scale production for efficacious drugs.

**Aim:** This study was carried out to set the quality parameters of *Gokshuradi Guggulu*, which is widely used in the treatment of *Prameha*, *Mutrakriccha*, *Pradara*, *Mutraghata*, *Vatrakta*, *Vatvyadhi*, *Shukradosha* and *Ashmari*.

**Method:** *Gokshuradi Guggulu* was evaluated by organoleptic, Physico-chemical, phytochemical, and physical parameters i.e. colour, odour, taste, friability, hardness, ash value, loss on drying etc.

**Result:** Colour of tablet was light brown, taste was bitter, weight was 300 mg, Average hardness 1.0kg/cm, friability 0.6 %, ash value 3.7 % w/w, loss on drying 1.5%. Glycoside, alkaloid, amino acid, carbohydrate, tannin, steroid, saponin were found.

**Conclusion:** This whole study shows that if we follow the same procedure with authentic drugs then large scale production also having Quality assurance.

**Keywords:** *Gokshuradi Guggulu*, Physico-chemical Parameters, phytochemical Parameters.

**INTRODUCTION:** Ayurveda is the oldest holistic medical system and being practiced in all over world. Ayurvedic medicines are gaining popularity among physicians and patients on whole world. Lack of quality standards and problems, in preparing or testing them, are the main hurdles experienced by both practitioners. The development of this traditional system of medicines will help to preserve the traditional heritage and rationalize the use of natural products in health care with perspectives of quality and safety. *Guggulu-Kalpana* is most prescribed herbal formulation in various diseases among all formulations. According to Ayurveda *guggulu* contains characteristics i.e. antiseptic, antibacterial,

astringent, antispasmodic, and is a carrier for other drugs.<sup>i</sup> Modern science also proves the anti-inflammatory and hypolipemic actions of *guggulu*.<sup>ii,iii</sup>

*Guggulu* should administered along with other herbs in combination such as *triphala guggulu*, *kaishore guggulu*, *gokshuradi guggulu* etc. The use of *guggulu* with other herbs has the effect of *ama* relieving.<sup>iv</sup> (toxic materials) from the body. Ayurveda describes about 17 different *guggulu kalpanas*.<sup>v</sup> Among them *Gokshuradi-Guggulu* is recommended in the management of *Prameha*, *Mutrakriccha*, *Pradara*, *Mutraghata*, *Vatrakta*, *Vatvyadhi*, *Shukradosha* and *Ashmari*. which is mentioned in *Sharangadhara Samhita*<sup>vi</sup>, *Brihat nighantu*

Ratnakar<sup>vii</sup>, Gada Nigraha<sup>viii</sup>. Here Gokshurdi guggulu is taken for standardization study. For evaluation, some quality parameters are taken i.e. organoleptic study, physical parameters, physico chemical parameters and phyto chemical parameters. Three Different batches of Gokshuradi guggulu were analyzed by above quality parameters in these study.

## MATERIAL AND METHOD

**Preparation of Gokshuradi-Guggulu:** Gokshuradi Guggulu ingredients have been identified & authenticated by the drug selection committee of Sundar Ayurveda Teaching Pharmacy, Nadiad

according to API. Then prepared the coarse powder of Gokshura, Triphala, Trikatu and Musta by hammer mill, then prepared the fine powder by the pulverizer and sieved it (sieve no. 80) by sieving and grinding machine. First of all kvatha of Gokshura churna was prepared, then shuddha guggulu was added. And heat was given till it becomes semi solid form, then homogeneously mixed fine powder of Triphala, Trikatu and Musta was added and prepared doughy mass and subjected for granulation by granulator. After drying of granules prepared the 300 mg tablet through Tablet punching machine.

**Table:1 Content of Gokshuradi-Guggulu**

Sl.No.	Name of ingredient	Latin name	Part used	Proportion
1	Gokshura	<i>Tribulus terrestris</i> Linn.	Fruit	28 parts
2	Water	-	-	168 parts
3	Shuddha Guggulu	<i>Commiphora mukul</i> Hook.	Oleo gum resin from stems	7 parts
4	Haritaki	<i>Terminalia chebula</i> Retz.	Pericarp	1 part
5	Bibhitaki	<i>Terminalia bellerica</i>	Pericarp	1 part
6	Amalaki	<i>Emblica officinalis</i> Gaertn.	Fruit	1 part
7	Sunthi	<i>Zingiber officinale</i> Roxb.	Rhizome	1 part
8	Maricha	<i>Piper nigrum</i> Linn.	Fruit	1 part
9	Pippali	<i>Piper longum</i> Linn.	Fruit	1 part
10	Musta	<i>Cyperus rotundus</i> Linn.	Rhizome	1 part

**Analytical study:** Organoleptic parameters of Gokshuradi-Guggulu like Taste, Color, odors and touch were scientifically studied. Physico-chemical

parameters like pH, particle size, ash value, extractive values, loss on drying. And Physical parameters observation and Phyto chemical screening was also done.

## OBSERVATION AND RESULTS

**Table 2: Yield of 3 different batches of Gokshuradi-Guggulu**

Drug name	Batch-1	Batch-2	Batch-3
Gokshura	14 kg	14 kg	14 kg
Guggulu	3.5 kg	3.5 kg	3.5 kg
Haritaki	500 gm	500 gm	500 gm
Bibhitaki	500 gm	500 gm	500 gm

Amalaki	500 gm	500 gm	500 gm
Sunthi	500 gm	500 gm	500 gm
Maricha	500 gm	500 gm	500 gm
Pippali	500gm	500gm	500gm
Musta	500gm	500gm	500gm
Yeilds	12.1 kg	13.5 kg	11.4 kg

**Table 3: Showing the Organoleptic parameters of Gokshuradi-Guggulu**

Sn	Parameters	Batch-1	Batch-2	Batch-3	
1	Colour	Light Brown	Light Brown	Light Brown	
2	Odour	Pleasant	Pleasant	Pleasant	
3	Taste	Bitter	Bitter	Bitter	
4	Shape	Round-flat	Round-flat	Round-flat	
5	Size <sup>ix</sup>	Diameter	10.32mm	10.48mm	10.48mm
		Thickness	2.98mm	2.41mm	2.41mm

**Table 4 : Showing the physical parameters of Gokshuradi-Guggulu**

Sn.	Parameters	Batch-1	Batch-2	Batch-3	
1	Weight Variation	Average weight of 20 tablets	300mg	300mg	300mg
		No. of tablets within allowable limit	18	18	19
		No. of tablets not within allowable limit	02	02	01
2	Hardness	0.6 kg/cm	0.5 kg/cm	1.0 kg/cm	
3	Friability	0.4%	0.2%	0.6%	
4	Disintegration time	13 min	13 min	14 min	

**Table 5: Showing the Physico-chemical parameters of Gokshuradi-Guggulu**

Sn	Parameters	Batch-1	Batch-2	Batch-3
1	Ash Value (% w/w) <sup>x</sup>	5.2% w/w	7.5% w/w	3.7% w/w
2	Acid-insoluble Ash value (%w/w) <sup>xi</sup>	2.0% w/w	0.9% w/w	0.6% w/w
3	Alcohol soluble extractive value % (v/w) <sup>xii</sup>	36.1% v/w	30% v/w	29.4% v/w
4	Water soluble extractive value (% v/w) <sup>13</sup>	31.8% v/w	40.1% v/w	33.7% v/w
5	Loss on Drying (%) <sup>13</sup>	2.6%	1.5%	1.5%

**Table 6: Showing the Phyto-chemical screening of Gokshuradi-Guggulu.**

Sn	Parameters	Batch-1	Batch-2	Batch-3
1	Glycoside	Present	Present	Present
2	Amino acid	Present	Present	Present
3	Protein	Absent	Absent	Absent
4	Carbohydrate	Present	Present	Present
5	Flavanoid	Present	Present	Present

6	Tannin	Present	Present	Present
7	Steroid	Present	Present	Present
8	Saponin	Present	Present	Present
9	Alkaloid	Present	Present	Present

**DISCUSSION:** *Gokshuradi Guggulu* is traditionally used in *Ayurveda* in the treatment of Gall bladder disorder, Kidney disease, corpulence (obesity) and skin disorders, infertility. The *Guggulu* family of herbs is geared towards detoxifying the deep tissues of the body. When combined with *Gokshuradi*, *guggulu* detoxifies the lymphatic system as well as the hormonal system, with specific effectiveness on the thyroid gland & Gall bladder disorders. *Gokshuradi Guggulu* is a traditional Ayurvedic compound used to support the proper function of the genitourinary tract. It strengthens and tones the kidneys, Gall bladder and urethra as well as the reproductive systems. The main ingredient, *Gokshura*, is renowned for its rejuvenating action on the kidneys and prostate. Combined with *guggulu*, *triphala* and *trikatu*, it detoxifies the urinary system and maintains healthy urinary composition, thus reducing the risk factors that may lead to stone formation. Detailed description of

*Guggulu* is given in *Brihatrayi*. *Gokshuradi Guggulu* is shown in various classical books which is shown in table-7. *Gokshuradi guggulu* is *rasayana* for *mutravaha srotas* and it has also properties for mitigation of *kapha* and *vata*. After analysis of three batch of *Gokshuradi-Guggulu* we make sure that if *Gokshuradi-Guggulu* is formed by heating method, there is no big change in organoleptic, physicochemical and phyto-chemical test. In result of organoleptic study colour of tablet was light brown, bitter in taste, shape was round. In physical Parameters-weight was 300 mg. In physical parameters viz. Avarage hardness 1.0kg/cm, friability 0.6 %. In Physico-chemical parameters ash value 3.7 % w/w, loss on drying 1.5%, acid insoluble ash value 0.6%w/w, alcohol soluble extractive value 29.4%v/w, water soluble extractive value 33.7v/w. In phyto-chemical screening glycoside, alkaloid, amino acid, carbohydrate, tannin, steroid, saponin were found.

**Table—7 *Gokshuradi-Guggulu* in classical text books.**

Drugs	<i>Sharangdhar Samhita</i>	<i>Gada Nigraha</i>	<i>Brihat Nighantu Ratnakar</i>	<i>Vrunda Madhav</i>
<i>Haritaki</i>	✓	✓	✓	✓
<i>Bibhitaka</i>	✓	✓	✓	✓
<i>Amalaki</i>	✓	✓	✓	✓
<i>Sunthi</i>	✓	✓	✓	✓
<i>Maricha</i>	✓	✓	✓	✓
<i>Pippali</i>	✓	✓	✓	✓
<i>Gokshura</i>	✓	✓	✓	✓
<i>Guggulu</i>	✓	✓	✓	✓
<i>Musta</i>	✓		✓	✓

According to table all the ingredients are same in all classical text books. But only in *Gada Nigrahah*, *musta* is excluded.

**CONCLUSION:** The study shows that quality control parameters for Standardization were followed during the preparation of *Gokshuradi-Guggulu*. Organoleptic parameters, physic-chemical analysis and Phyto-chemical parameters were carried out for the standardization of these *Guggulu* formulation. This study shows that, if one follow the same procedure with authentic drugs then large scale production also having Quality assurance.

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