



## CONCEPT OF GUGGULU (COMMIPHORA MUKUL LINN.)- A REVIEW

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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. Drugs have a variety of uses including culinary, medicinal or in some cases even spiritual usage. The green, leafy part of the plant is often used but herbal medicines make use of the roots, flowers, seeds, root bark, inner bark (cambium), berries, pericarp, gums, resins, exudates or other portions. General usage differs between culinary herbs and medicinal herbs. In ancient times, when *Vaidyas* prepared medicines, they were very conscious about the qualities of the drugs. Quality in the use of crude drugs or plant medicines depends upon a variety of factors, genetically strong seed, correct species, maturity of the plant at harvest, good soils, air quality, climate, organoleptic factors such as intensity of colour, flavour and odour, processing after harvest and a variety of other factors. *Guggulu* which is an exudate is the main raw drug. The other drugs which are used for *Shodhana* of *Guggulu* are *Guduchi Kwatha*, *Triphala Kwatha* and *Godugdha*.

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## INTRODUCTION

*Guggulu* is well-known and widely used drug in *Ayurveda*. It is used not only as medicine but also in religious rituals. The earliest reference of *Guggulu* is found in *Atharvaveda*. From that time to till now, *Guggulu* is served to human being as highly valuable medicinal herbal. *Guggulu* is exudate (*Niryasa*) of *Commiphora Mukul Linn.* It is translucent, solid, sticky adhesive, olio-gum-resine.

### Historical review

The historical references can be classified into following categories:

1. *Vedik kala*
2. *Samhita kala*
3. *Sangraha kala*
4. *Nighantu kala*
5. *Aadhunika kala*

### Vedik Kala

*Guggulu* is a well-known drug since Vedic period. There are few references of the drug in *Vedas*, where it has been described to be used in different forms and in various diseases. *Guggulu* is described as *Yakshmanashana* in *Atharvaveda*. There is categorical description that who have the smell (*Gandha*) of herb like *Guggulu*, diseases can't effect on him.

### Samhita Kala

*Guggulu* is used for various disorders in various forms. References of *Guggulu* in *Charaka Samhita*<sup>1</sup> *Sushruta Samhita*<sup>2</sup> *Ashtanga Sangraha*<sup>3</sup> and *Ashtanga Hridaya*<sup>4</sup> were placed below:

### Charaka Samhita

Table no 1 Showing references in *Charaka Samhita*

No	References	Formulations	Used As	Disease
1.	<i>Su.3/4</i>	3 <sup>rd</sup> Pradeha	Pradeha	<i>Kushtha, Kilasa, Kitibha, Dadru, Pama, Apachi Etc</i>
2.	<i>Su. 4/17</i>	<i>Sangyasthapana Dashemani</i>	-----	-----
3.	<i>Su.5/21</i>	<i>Prayogika Dhumapana Varti</i>	<i>Dhumapana</i>	<i>Dincharya</i>
4.	<i>Vi.8/144</i>	<i>Kashaya-Skandha Dravya</i>	---	<i>Asthapanadravya Kalpa Samgraha Kaumar Paricharya Gahya Shilajita Varnana</i>
5.	<i>Sha.8/61</i>	<i>Yavadi Dhupa</i>	<i>Dhupana</i>	<i>Paricharya</i>
6.	<i>Chi.1/358</i>	<i>Guggulu Sadrusha Varna</i>	---	<i>Gahya Shilajita Varnana</i>
7.	<i>Chi.3/307</i>	<i>Palamkashadi Dhuma</i>	<i>Dhupana</i>	<i>Vishamajvara</i>
8.	<i>Chi.28/242</i>	<i>Guggulu+Godugdha</i>	<i>Pana yoga</i>	<i>Avritta Vata</i>
9.	<i>Chi.29/159</i>	<i>Guggulu+Madhu</i>	<i>Pana yoga</i>	<i>Vatarakta</i>
10.	<i>Ka.1/23</i>	<i>Madanaphala Virechana</i>	<i>Modaka/Ut Karika</i>	<i>Virechana Karma</i>

**Sushruta Samhita**

**Table no 2** Showing references in Sushruta Samhita

No	References	Formulations	Used As	Disease
1.	Su.5/18	Dhupana Dravya	Dhupana Vrana	Paschyat Karma
2.	Su.15/32	Virukshaneeya And Chhedaniya Dravya	Pana Yoga	Atisthaulya
3.	Chi.5/35	Guggulu+Gomutra	Pana Yoga	Urustambha
4.	Chi.7/14	Varunadi Ghrita	Ghritha	Kaphaja Ashmari
5.	Chi.16/33	Guggulu+ Devadaru Kwatha	Pana Yoga	Vidradhi
6.	Chi.22/5	Pratisarana Yoga	Churna	Vataja Austharoga
7.	Chi.23/12	Guggulu+ Gomutra Or Punarnava Kashaya	Pana Yoga	Shotha
8.	Ka.5/66	Tarkshya Agada	Churna	Sarpavisha
9.	Ka.8/137	Karnika Patina Lepa	Lepa	Karnika Patana In Mushikavisha
10.	Utt.61/27	Kulathadi Ghrita	Ghritha	Vatika Apasmara

**Astanga Sangraha**

**Table no 3** Showing references in Astanga Sangraha

No	References	Formulations	Used As	Disease
1.	Su.3/21	Dantadhavan Varjya Vriksha	---	---
2.	Su.8/117	Vishghna Dhupa	Dhupana	---
3.	Su.11/31	Guggulu+ Gomutra	Pana yoga	Alasaka
4.	Chi.1/79	Sarivadi Kwatha	Kwatha	Kaphaja Jvara
5.	Chi.10/23	Guggulu Asava	Asava	Arsha
6.	Chi.16/15	Yavanyadi Churna	Churna	Gulma
7.	Utt.4/13	Guggulu Dhupa	Dhupana	Balagraha
8.	Utt.49/172	Guggulu+Shilajatu+Gugdha	Pana Yoga	Vatarakta
9.	Utt.49/173	Guggulu+Mansarasa /Dugdha/Gomutra	Pana yoga	Vata-Pitta-Kapha Hara
10.	Utt.49/174	Magadhikadi Guggulu	Churna	Sarvaroga Hara

**Astanga Hrudaya**

**Table no 4** Showing references in Astanga Hrudaya

No	References	Formulations	Used As	Disease
1.	Su.21/13	Mrudu Dhumapana Dravya	Dhumapana	Dincharya
2.	Su.29/25	Guggulvadi Dhupa	Dhupana	Paschyat Karma of Vranakarma
3.	Chi.1/163	Aparajita Dhuma	Dhupana	Sarvajvara
4.	Chi.8/146	Putikarnjadi Chukra	Chukra	Arsha Roga
5.	Chi.14/99	Guggulu+ Gomutra	Pana Yoga	Gulma
6.	Chi.21/49	Guggulu+ Madhu / Gomutra	Pana Yoga	Urustambha
7.	Utt.18/18	Guggulu Dhupa	Dhupana	Karnapuya
8.	Utt.22/3	Mahasnehadi Taila(Pichu)	Taila	Vataj Austharoga
9.	Utt.28/38	Amritadi Guggulu	Churna	Pitika, Sthaulya, Bhagandara Kushtha,
10.	Utt.28/42	Uttamadi Guggulu	Gutika	Pramehapidika, Bhagandara

**Table no. 5** Showing references in Chakradatta

No	References	Formulations	Used As	Disease
1.	Jvara Chi.1/222	Gugguladi Dhupa	Dhupana	Charthurtika Jvara
2.	Arsha Chi..5/158	Guggulu+ Triphala Kwatha	Pana yoga	Dagdha Arsha Upadrava
3.	Unmada Chi..20/35	Mahapaishachika Ghrita	Ghritha	Unmada
4.	Vatavyadhi 22/48	Rasnadi Gutika Guggulu+ Gomutra	Gutika	Vatavyadhi
5.	Urustambha Chi..24/3	Or Dashmoola Kwatha	Pana Yoga	Urustambha
6.	Urustambha Chi. 24/6	Guggulu+ Gomutra	Pana Yoga	Urustambha
7.	Aamavata Chi. 25/31-36	Simhanada Guggulu	Gutika	Amavata
8.	Sthaulya Chi. 36/18	Navaka Guggulu	Gutika	Sthaulya
9.	Amlapitta Chi. 52/14	Vasa Guggulu	Gutika	Amlapitta
10.	Karnaroga Chi.57/49	Guggulu Dhupa	Dhupana	Karna Daurgandhya

**Sangraha Kala**

In Sangraha Kala, references are collected from Chakradatta<sup>5</sup> Gadanigraha<sup>6</sup> Sharngadhara Samhita<sup>7</sup> and Bhavaprakasha<sup>8</sup>

**Chakradatta**

**Gadanigraha**

**Table no 6** Showing references in Gadanigraha

No	References	Formulations	Used As	Disease
1.	Prayoga Khanda 1/200-207	Guggulu Tiktaka Ghrita	Ghritha	Vidradhi, Tvagavikara Etc
2.	Prayoga Khanda 2/343-344	Gugguladi Suryapaka Taila	Taila	Kustha
3.	Prayoga Khanda 2/433-436	Brihata Sahachara Taila	Taila	Vatavyadhi
4.	Prayoga Khanda 4/326-333	Yogaraja Guggulu	Gutika	Arsha
5.	Kayachikitsa Khanda 1/540	Shirishadi Dhupa	Dhupana	Sarvajvara
6.	Kayachikitsa Khanda 19/140	Guggulu Pana With Guduchi-Triphala Kwatha	Kwatha	Koshtrukashirsha
7.	Kayachikitsa Khanda 19/146	Rasna Guggulu	Gutika	Gridhrasi
8.	Shalakyia Khanada 2/67	Guggulu Dhupana	Dhupana	Karnaroga
9.	Shalya Khanda 3/68	Vrana Dhupana	Dhupana	Vranashopha
10.	Bhuta Tantra 1/29	Guggulu Dhuma	Dhupana	Nagagraha

**Sharangadhara Samhita**

**Table no 7** Showing references in Sharangadhara Samhita

No	References	Formulations	Used As	Disease
1.	Purva Kha. 4/13	Rasayana Dravya	---	---
2.	Madhyama Kha.2/118	Guggulu+Punarnavadi Kwatha	Pana Yoga	Shothodara
3.	Madhyama Kha.7/40-49	Chandraprabha Vati	Gutika	Sarvaroga, Prameha, Mutravikara, Ashmari, Shoola, Upadansha,Etc
4.	Madhyama Kha.7/82-83	Triphala Guggulu	Gutika	Bhagandara, Gulma, Shotha, Arsha Kushtha,Tridoshaja Vikara, hagandara, Pliha, Gilma, Gala Roga, Shiroroga, Netraroga Etc.
5.	Madhyama Kha.7/88-94	Triphala Modaka	Modaka	Gandamala, Granthi, Apache, Arbuda, Vrana, Gulma, Kushtha, Bhagandara
6.	Madhyama Kha.7/94-100	Kanchanara Guggulu	Gutika	Rasayana, Tridoshaghna Kushtha, Vatarakta, Gulma, Vrana, Pramehapidika,Etc
7.	Madhyama Kha.7/56-69	Yogaraja Guggulu	Gutika	Pradhmana Nasya
8.	Madhyama Kha.7/70-81	Kaishora Guggulu	Gutika	Pradhmana Nasya
9.	Uttara Kha. 8/23	Marichadi Nasya	Churna	Pradhmana Nasya
10.	Uttara Kha. 9/19	Eladi Gana Kalka Dhuma	Dhuma Pana	Shamana Dhumapana

**Bhavaprakasha Madyama Khanda**

**Nighantu Kala**

An elaborative description is found about Guggulu regarding its synonyms, types, properties and uses in Dhanvantari Nighantu, Madanpal Nighantu, Raja Nighantu, Bhavaprakasha Nighantu, Brihat Nighantu Ratnakara, Priya Nighantu etc.

**Table no 8** Showing references in *Bhavaprakasha Madyama Khanda*

No	References	Formulations	Used As	Disease
1.	<i>Jvaradhikara.1/661</i>	Guggulu+Shatyadhi Kwatha	Pana Yoga	Sandhika Sannipatika Jvara
2.	<i>Vatavyadhi 24/82</i>	Guggulu Prayoga	Nasya	Avabahuka
3.	<i>Vatavyadhi 24/327-332</i>	Mahayogaraja Guggulu	Gutika	Vatavyadhi, Rasayana
4.	<i>Urustamba 25/33</i>	Amrita Guggulu	Gutika	Urustambha
5.	<i>Amavata 26/29</i>	Guggulu+Gomutra	Pana Yoga	Amavata
6.	<i>Sthaulya 39/23</i>	Guggulu+Guduchi Triphala Kwatha	Pana Yoga	Medovridhi
7.	<i>Udararoga 41/61</i>	Guggulu+Gomutra	Pana Yoga	Sarvanga Shotha, Udara Roga, Kasa, Shwasa
8.	<i>Upadansha 51/36-37</i>	Varadi Guggulu	Gutika	Upadamsha
9.	<i>Karnaroga 64/48</i>	Guggulu Dhupana	Dhupana	Karna Daurganda
10.	<i>Balaroga 71/76</i>	Kushthadi Taila	Taila	Revati Graha

**Adhunik Kala**

Texts after 19<sup>th</sup> century come under *Adhunik Kala*. In this, *Bhaishajya Ratnavali*<sup>8</sup> and *Rasa Yoga Sagara*<sup>10</sup> were taken for references about *Guggulu*.

**Bhaishajya Ratnavali****Table no. 9** Showing references in *Bhaishajya Ratnavali*

No	References	Formulations	Used As	Disease
1.	<i>Shodhana-Marana Pra. 2/181</i>	Guggulu Shodhana	---	---
2.	<i>Jwara Chi.5/145</i>	Sarivadi Kwatha	Kwatha	Kaphaja Jwara
3.	<i>Arsha Chi.9/223-233</i>	Chandraprabha Gutika	Gutika	Bhagandara, Pandu, Kamala, Rasayana
4.	<i>Vatavyadhi 26/64</i>	Guggulu+Triphala- Guduchi Kwatha	Pana Yoga	Koshtrukashirsha
5.	<i>Vatarakta Chi.27/109- 113</i>	Punarnava Guggulu	Gutika	Vatarakta, Gridhrasi, Vridhdhi Roga
6.	<i>Aamavata 29/152-155</i>	Vatari Guggulu	Gutika	Aamavata, Katishoola, Gridhrasi, etc
7.	<i>Prameha Chi.37/98-101</i>	Chandraprabha Gutika	Gutika	Prameha
8.	<i>Udararoga Chi.40/34-35</i>	Punarnavadi Kwatha +Guggulu	Pana Yoga	Shothodara, Kasa, Shoola
9.	<i>Galagandadi Chi.44/64-69</i>	Kanchanara Guggulu	Gutika	Galaganda, Apachi, Arbuda, Vrana, Gulma, Bhagandara
10.	<i>Vranashotha Chi.47/51</i>	Triphala Kwatha Shodhita Guggulu	Pana Yoga	Kleda-Paka Yukta Vrana

**Rasa Yoga Sagara****Table no 10** Showing references in *Rasa Yoga Sagara*

No	References	Used As	Disease
1.	<i>Achaleshvara Rasa(90)</i>	Churna	Jarahara
2.	<i>Abhra Guggulu(139)</i>	Gutika	Sarva Shoola
3.	<i>Amavatori Vatika(322)</i>	Gutika	Amavata
4.	<i>Kushtha Kuthara Rasa Prathama(285)</i>	Churna	Kushtha
5.	<i>Kaushikadi Gutu (351)</i>	Gutika	Aamashoola, Atisara
6.	<i>Chandraprabha Vati Prathama(51)</i>	Gutika	Prameha
7.	<i>Pratapalankeshvara Rasa Pratham(235)</i>	Gutika	Sannipataja Jvara
8.	<i>Yogaraja Guggulu Pratham(9)</i>	Gutika	Vataroga
9.	<i>Vajra Guggulu(355)</i>	Gutika	Vatarakta
10.	<i>Somanatha Rasa Pratham(550)</i>	Gutika	Somaroga

**Rasa Granthas**

*Guggulu* is not included in *Maharasa* or *Uparasa* or *Sadharanarasa* of *Rasa Shastra*. But it is quoted in *Dravaka Gana* and *Mitra Panchaka Gana* as a reducing agent for different metals and minerals. Mythological origin of *Guggulu* by god *Vishnu* has been described in *Prathmollasa* of *Ananda Kanda*. Five types of *Guggulu* has been mentioned in the text.

**Vernacular Names of Guggulu**

Arabic : Moql, Moqle-arzaqi, Aflatan  
Bengali: Guggulu, Mukul  
Canarese: Guggulu

Gujarati:Googal, Googalee

Persian:Baijahundana

Tamil:Gukkulu Maisatch, Kungiliyam

Telugu:Gukkulu

English:Gum-guggulu, Indian Bedellium

Hindi:Googal, Guggal

Kannada:Guggulu

**Paryaya of Guggulu (Synonyms)**

*Paryaya* of a drug gives us very important information about the plant and its

*Guna*, *Karma* etc. There are a lot of *Paryaya* of *Guggulu* have been used in different classics of *Ayurveda*. They have been tabulated as follows

**Mythological Origin**

According to *Agnipurana* that *Guggulu* is originated from *Gomutra* (*Vaishnava Dharma Shuddhi Vritanamadhyaya*). Again *Vagbhata* has quoted that *Guggulu* was evolved as "Amrita" by Lord *Vishnu* during *Devasur Sangrama* for replenishing lost *Bala*, *Shourya* and *Teja* of *Devas*.

**Gana/Varga**

Different *Acharya* have described *Guggulu* in different *Ganas*, which are described as follows in below mentioned table.

**Table no 11** Showing references of synonyms in various classics

Paryaya	Grantha													
	A.V.	Ch. Sam.	Su. Sam.	As. Hr.	Dh. N.	Raj. N.	M.P.N.	Shal. N.	B. P. N.	As. Hr. K	A. K.	S.K.D.	Hla. K.	Kai. N.
Ullukhalkam	-	-	-	-	-	-	-	-	-	-	-	+	+	-
Ullukhalam	-	-	-	-	-	-	-	-	-	-	-	-	-	+
Kala Niriyasa	-	-	-	-	+	+	+	+	-	+	-	+	+	+
Kunti	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Kumbha	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Kumbholu	-	-	-	-	-	-	-	-	-	-	-	+	+	-
Kumbholukhala-kam	-	-	-	-	-	-	-	-	+	-	+	+	+	-
Kaushika	-	-	-	-	+	+	+	+	+	+	+	+	+	+
Khalkam	-	-	-	-	-	-	-	-	-	-	+	+	-	-
Guggulu	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Divya	-	-	-	-	-	-	-	-	-	-	-	+	+	+
Durga	-	-	-	-	+	+	-	-	-	+	-	+	+	+
Deveshta	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Devadhoop	-	-	-	-	-	-	+	+	+	-	-	+	+	-
Dhurta	-	-	-	-	-	-	+	+	-	-	-	-	-	-
Naktachara	-	-	-	-	+	-	-	-	-	+	-	-	-	-
Nishatak	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Jatayu	-	-	-	-	+	-	+	+	+	+	-	+	+	+
Jatalah	-	-	-	-	-	+	-	-	-	-	-	+	-	+
Palankash	-	-	-	-	-	-	+	+	+	+	-	-	+	+
Palankasha	-	-	+	+	+	-	-	-	-	-	-	+	-	-
Pavanadwishta	-	-	-	+	-	-	-	-	-	-	-	-	-	-
Puraha	-	+	+	-	+	+	+	+	+	+	+	+	+	+
Bhavabhista	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Bhutahara	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Marudwishta	-	-	-	-	-	-	-	-	-	-	-	+	+	-
Marudeshya	-	-	-	-	-	+	-	-	-	-	-	-	-	-
Mahishaksha	-	-	-	+	-	-	+	+	+	+	-	+	+	+
Mahishakshaka	-	-	-	-	+	+	-	-	-	-	-	+	+	-
Yavanadwishta	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Yatughna	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Vayughna	-	+	-	-	-	-	-	-	-	-	-	+	+	-
Rakshoghna	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Rukshagandha-ka	-	-	-	-	-	+	-	-	-	-	-	+	+	-
Shambhava	-	-	-	-	-	-	-	-	-	-	-	+	+	-
Shiva	-	-	-	-	+	+	+	+	+	+	-	+	+	+
Sarvasaha	-	-	-	-	-	-	-	-	-	-	-	+	+	+

**Table no 12** Showing references of Gana of Guggulu in various classics

Grantha	Gana/Varga
Charaka Samhita	Sangyasthapana(Su.4/17), KashayaSkandha(Vi.8/144)
Sushruta Samhita	Eladi(Su.38/24), Katu Skandha(Su.42/11)
Ashtanga Sangraha	Eladi(Su.16/37), Rasayana(Utt.,49/159-174)
Ashtanga Hridaya	Eladi(Su.15/43)
Harita Samhita.	Rasayana(Kalpa Sthana-5)
Dhanvantari Nighantu	Chandanadi (Chandanadi Varga 128-131)
Madanpal Nighantu	Karpooradi(3/45-48)
Kaideva Nighantu	Aushadhi(Aushadi Varga,1/1405-1420)
Bhavaprakasha Nighantu	Karpooradi(Karpuardi Avrga/32-45)
Raja Nighantu	Chandanadi (Chandanadi Varga/103-109)
Dravya Guna Vigyana (P. V. Sharma)	Vedana Sthapana(Pratham Adhyaya-20)

**Types of Guggulu**

The Vedas are the root source of knowledge, which is preserving it in seed form. Ayurveda is the Upaveda of Atharvaveda. Atharvaveda quotes that Guggulu is of two types.

**Saindhavam**

Which is found near the Sindhu River.

**Samudriyam**

Which is found near the ocean.

Bhavaprakasha has prescribed five types of Guggulu on the basis of color<sup>11</sup>.

These are:

1. Mahishaksha
2. Mahaneel
3. Kumuda
4. Padma
5. Hiranya

Each type has its specific color, as Mahishaksha has the color either of Bhringa or Anjana. Mahaneel is extremely blue in color, Kumuda type has the color of Kumuda flower i.e. white, Padma looks dark red like ruby color, while Hiranya looks like gold. However, each type of variety has been prescribed for specifically in human and animals.

The Kanaka type has been told best of all and prescribed to use as medicine in human beings. Mahishaksha can be used as medicine in humans, Mahaneel and Mahishaksha have been told to be useful in elephants and Kumuda and Padma has been said to be useful in horse.

Jaykrishna Indrajai referred two types of Guggulu that is available at kutch locality<sup>20</sup>

1. Kadvo Guggal
2. Mitho Guggal

Many other Acharyas have also quoted different types of Guggulu which have been tabulated as follows

**Table no 13** Showing references of types of *Guggulu* in various classics

Types	A.V.	Dh.N.	Raj. N.	B.P.N.	An.Kn.	Kai.N.	Shal. N.	As. H.K.	D.G.V. (Yadavaji)
<i>Mahishaksha</i>	-	-	-	+	+	+	-	-	+
<i>Mahaneel</i>	-	-	-	+	+	+	-	-	-
<i>Kumud</i>	-	-	-	+	+	+	-	-	-
<i>Padma</i>	-	-	-	+	+	+	-	-	-
<i>Kanak</i>	-	-	-	+	+	+	-	-	+
<i>Kana</i>	-	+	+	-	-	-	-	+	-
<i>Bhumija</i>	-	+	+	-	-	-	+	+	-
<i>Gundhiraja</i>	-	-	-	-	-	-	+	-	-
<i>Sadharana</i>	-	-	-	-	-	-	-	+	-
<i>Nadi</i>	+	-	-	-	-	-	-	-	-
<i>Samudra</i>	+	-	-	-	-	-	-	-	-

### Properties of Guggulu

Various *Acharyas* have given many properties of *Guggulu*, which are as follows in table.

**Table no. 2.14** Showing different properties of *Guggulu* in various classics

In nutshell we can conclude that *Guggulu* has

- *Rasa: Tikta, Katu*
- *Guna: Old - Laghu, Ruksha, Tikshna, Vishada, Sukshma, Sar*

New – *Snigdha, Pichhila*

- *Veerya: Ushna*
- *Vipaka: Katu*
- *Prabhava: Tridosahara*

### Pariksha of Guggulu

Characteristics of genuine *Guggulu* is as below:

1. *Astanga Sangraha, Uttara Tantra, 49/162-*
  - Intense smell,
  - *Snigdha, Pichhila* and
  - Free from physical impurity.
2. *Kaiyadeva Nighantu, Aushadhi Varga, 1412-*
  - Melts in sunlight
  - Immediately burns in fire.
3. *Rasa Ratnakara, Rasa Khanda, 10th Upadesha /76*
  - Burns in fire
  - Melts in sunlight and
  - Gives milky emulsion in lukewarm

*Guggulu*, which is brittle, dull in colour and of older in age, should not be used for treatment

### Dose (Matra)

**Table no. 15** Showing different doses of *Guggulu* in various classics

Sr.no.	Reference	Matra
1.	<i>Astanga Samgraha, Uttartantra 49/162</i>	Up to 1 Tula(100 Pala) must not take more than 1 pala in a single dose
2.	<i>Aanandakanda, 15th Ullasa/310</i>	1 Nishka (3 gm) to 1 Karsha (12gm) daily
3.	<i>Harita Samhita Kalpa Sthana 5/19</i>	1 Karsha(12gm) to 1 Pala(48gm)
4.	AFI, Vol 1, page no58 Pt.Vishwanath Dwivedi	2-4gm
5.	(commentary of <i>Bhavaprakasha Nighantu</i> )	2-4 Masha

### Apathya

During the administration of *Guggulu* following things should be avoided-

*Amla* (Sour) *Dravya*, *Tikshna* (Pungent) *Veeryadravya*, *Ajirna* (Dyspepsia), *Vyavaya* (Sexual Indulgence), *Shrama* (Fatigue), *Madya* (Alcohol), *Krodha* (Anger)<sup>13</sup>

### Ati Matra Sevana Vikara

Long term and higher dose administration of *Guggulu* may lead To *Timir* (Blindness), *Vadanshosa* (Dryness Of Mouth), *Klibata* (Impotency), *Karshya* (Emaciation), *Moha* (Delusion), *Shamal Shithil Bhava* (Diarrhoea), *Deha Raukshya* (Dryness Of Skin)<sup>14</sup> etc.

### Botanical Description

#### Systemic position of *Commiphora Mukul* Linn.<sup>15</sup>

Kingdom	Planate
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Sapindales
Family	Burseraceae
Genus	Commiphora
Species	Mukul
Species Authority	(Arnott)Bhandari

### Habitat

It has wide distribution in North, Western India, particularly Rajasthan, Gujarat, Maharashtra and Karnataka. *Guggulu* is found throughout the subcontinent of India, the Middle East and Africa, particularly in dry arid locales<sup>16</sup>

### Morphological characters

Branches: Spirally ascending

Leaves : One to three foliate

Leaflets : Sessile to subsessile, rhomboid-ovate serrate toothed in the upper part, smooth and shining lateral

Flowers : Small, brownish red, polygamous in fascicles.

Calyx : Glandular hairs, forming cylindrical cap

Petals : Four to five times as long as sepal

Stigma : Eight to ten, inconspicuously bilobed

Stamens : Eight to ten, alternately long and short

Fruit : Drupe, red ovate, acuminate in shape, with 2-celled-store, rarely fourvalved

### Types

There are 185 existing species of genus *Commiphora*, *Guggulu* is produced in India only by 6 species<sup>17</sup> i.e.

1. *Commiphora mukul*
2. *Commiphora myrrha*
3. *Commiphora berryi*
4. *Commiphora stocksiana*
5. *Commiphora agallocha*

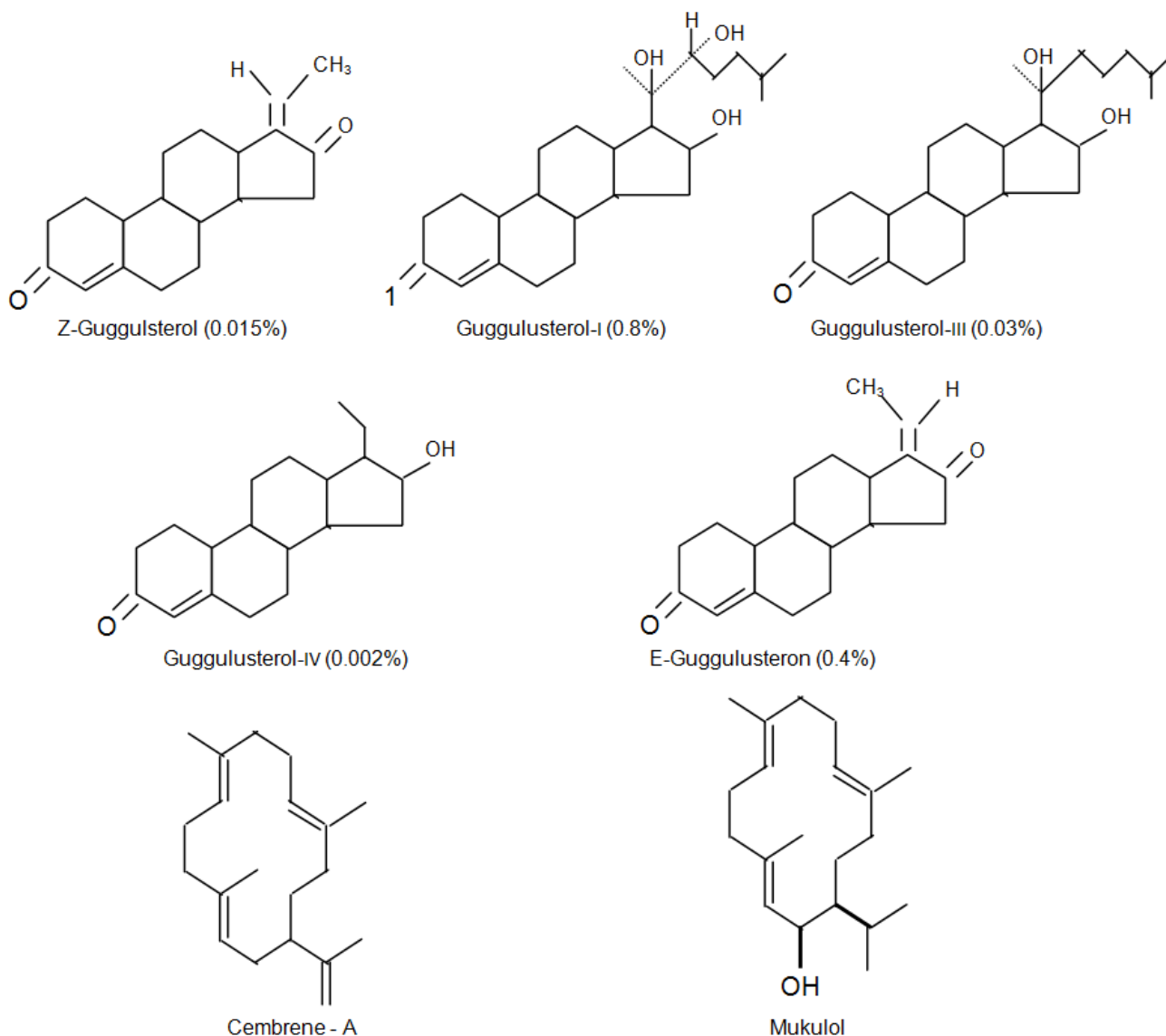
Out of these 5 species, *Commiphora mukul* is good producer of *Guggulu* whereas *Commiphora berryi* is usually used as a hedge plant all over South India and regionally known as Mulkiluvai<sup>18</sup>

### Chemistry

Chemically *Guggulu* is the complex mixture of Steroids, Diterpenoids, Aliphatic Esters, Carbohydrates and varieties of inorganic ions. From the gum resin sesamin, cholesterol, few other steroids, essential oil containing steroidal ketones, alcohol and aliphatic triols (mostly as esters of ferulic acid) were reported. The structural elucidation of steroidal constituents viz. *Z-Guggulsterone*, *E-Guggulsterone*, Five new sterols *Guggulusterols* – I, II, III, IV, & V have been established along with partial synthesis of *Guggulusterol* – II from diosgenin. In addition, diterpenoid constituents cembrene – A and Mukulol. Some fatty tetrols and octadecan – 1, 2, 3, 4 - tetrol, eicosan–1, 2, 3, 4-tetrol and nonadecan-1, 2, 3, 4-tetrol were reported.

The other chemical compounds reported are myrcene, dimyrcene and polymyrcene (from essential oil of resins) along with sugars (in the gum) and aldobiouronic acid; myricyl alcohol,  $\beta$ - sitosterol, fifteen amino acids viz., cystine, histidine, lysine, arginine, aspartic acid, serine glutamic acid, threonine, alanine, proline, tyrosin, tryptophan, valine, leucine and isoleucine along with sugar sucrose, glucose and fructose;  $\alpha$ - camphorene, cembrene and allycembrol; cembrene-A (structure of); flavanoids viz., quercetin, quercetin-3-0- $\alpha$ -L-arabinoside, quercetin-3-0- $\alpha$ -D-galactoside, quercetin-3-0- $\beta$ -L-rhamnoside, quercetin-3-0- $\beta$ -Dglucuronide along with the other components like ellagic acid and pelargonidin-3, 5- di-0-glucoside from the flower. Some steroidal components i.e. pregnenones-I, - II & - III (*Guggulsterol*-VI) were isolated from the gum resin of the drug and the structure of the new compound III was detected. Seed oil contains linoleic, oleic, stearic and palmitic acids, while unsaponifiable matter contains sitosterol, stigmasterol, cholesterol, campesterol and  $\alpha$ -spinasterol. *Z-Guggulsterone* was reported from the oleo-resin<sup>19</sup>

The molecular structure of some important chemical constituents of *Guggulu* are given below:



### Exudation of Guggulu gum

The gum exudes from the plant as a creamy sap which solidifies after sometime. The colour continues to change as it dries gradually from yellow/reddish, reddish-brown to dark reddish-brown under storage conditions.

### Period for Collection of Resin<sup>29</sup>

The Winter Exudation: The crystalline form of gum with small particles collected during winter, is known as Kan- Guggulu  
The summer Exudation: The gum which oozes during summer remains viscous throughout and is called Jhar

### Yield

Guggulu gum yield depends on a number of factors and varies from plant to plant including the age of the trees in the same area. However, dry Guggulu is usually obtained between 200-500gm from a healthy plant in a single season, applying tapping practices through incision.

### Resine formation mechanism<sup>21</sup>

Guggulu is synthesized in specialized cell and collected in lumen of the resin duct. Resin ducts are found in the secondary phloem and bordered by a layer of dense epithelium rich in cytoplasm with high metabolic activity. Resin ducts are discontinuous, oriented parallel to the longitudinal axis of stem and anatomize tangentially. Epithelium of the resin ducts collapses on injury of the bark and exudation occurs immediately. Exudation is assumed to provide plant defence, because

- They seal off injured tissue
- Prevent desiccation from injured tissue
- Protect against attack by insects and fungi and prevent further injury through decay

It means there is a healing mechanism in plants through rapid multiplication of cell.

### Harvesting / Collection and Tapping Method<sup>22</sup>

#### Tapping

- Extracted from the plant through a process is called tapping.
- Well grown mature plants (after 5 years minimum) of Guggulu are considered suitable for tapping gum.
- Tapping is usually done by giving an incision 3"-4" long on the main trunk of the plants.

#### Tapping method

Traditionally workers make several deep incisions on the stem (3 to 4 times more) to get maximum amount of resin by blazing, peeling or making deep cuts with the help of a sharp half circular knife while giving incision the knife is dipped in an activator like Gugal gum paste. For preparing Guggulu paste about 100 gm. powdered fresh oleo gum resin of Guggulu is taken in an earthen pot and about 200 cc. fresh water is mixed in it and stirred in with the help of a stick or a Guggulu plant twig. Stirring is continued till a fine paste is prepared.

Presently, an improved tapping technique, which involves the use of a so called 'mitchie gollidge' knife coupled with Ethephone. The application of Ethephone on the cuts enhances Guggulu gum production several times over that obtained in control<sup>32</sup>

Research studies showed that Ethephone treated plants started exuding gum earlier and increased the gum yield (450 mg)<sup>33</sup>

### Grades of Guggul-gum found in the market

- Ist Grade: Consist of translucent Gum free from bark and sand.
- IInd Grade: The dull coloured Gum mixed with bark and sand
- IIIrd Grade: The most inferior one is usually collected from the ground and is mixed with a lot of extraneous matters. The quality and grading of Guggulu gum depends on the shape and colour of the gum and its purity.

### Adulteration

In the market gum-oleo-resin is adulterated with gum resin of *Boswellia serrata* Roxb., *Sterculia urens* Roxbb., *Butea monosperma* Kurz., *Acacia nilotica* Willd., *Moringa oliefera* Lamk., *Acacia senegal* Willd. and *Acacia catechu* Willd<sup>25</sup> However, gum-resin of *Boswellia serrata* is more commonly used as an adulterant of Guggulu in the Indian Markets.

### The production of Guggul gum<sup>26</sup>

It was earlier estimated that the domestic demand of the country is about 300 tonnes, while the production is only 75 ton. Rest of the material is being imported mostly from Pakistan Sindh area adjoining Rajasthan to meet the demand of the country.

## DISCUSSION

Guggulu is described by the name of "Guggulu" in *Atharvaveda* (19/381/1) and two types of it also have been described, one which found near the *Sindhu* River, another which found near the *Samudra* (Ocean). It suggests that Guggulu is a well known drug from the *Vedic* period. Guggulu is described as *Yakshmanashana* in *Atharvaveda* Description of the Guggulu also found in *Agni purana* (*Vaishnava Dharma Shuddhi Vritanamadhyaya*). *Vagbhata* has quoted that Guggulu was evolved as "Amrita" by Lord *Vishnu* during *Devasur Sangrama* for replenishing lost *Bala*, *Shourya* and *Teja* of *Devas*. The use of Guggulu was found enormously in various preparations in all *Samhitas*, *Sangraha Granthas*, *Rasa Granthas* and other treatise of *Ayurveda*. An elaborative description is found about Guggulu regarding its synonyms, types, properties and uses in *Dhanvantari Nighantu*, *Madanpal Nighantu*, *Raja Nighantu*, *Bhavaprakasha Nighantu*, *Brihat Nighantu* *Ratnakara*, *Priya Nighantu* etc.

Guggulu is not included in *Maharasa* or *Uparasa* or *Sadharanarasa* of *Rasa Shastra Granthas*. But it is quoted in *Dravaka Gana* and *Mitra Panchaka Gana* as a reducing agent for different metals and minerals. Mythological origin of Guggulu by god *Vishnu* has been described in *Prathmollasa* of *Ananda Kanda*. Five types of Guggulu has been mentioned in the text.

After a detailed review of drug Guggulu, it is found that it is having *Tikta* and *Katu Rasa*, *Tikshna*, *Laghu*, *Ruksha*, *Sukshma* and *Sara Guna*, *Ushna Virya* and *Katu Vipaka*.

*Bhavaprakasha* described five types of Guggulu i.e. *Mahisaksha*, *Mahaneel*, *Kumuda*, *Padma* and *Hiranya* on the basis of color. But now a days only two types *Mahisaksha* and *Hiranya* i.e. *Kanaka Guggulu* are available. Commercially *Mahisaksha* is sold by the name of "Bhesha Googal" and

*Kanaka* as “*Kana Googal*”. *Bhesha* and *Kana* may be the rotted form of their original names. *Guggulu*, which found in *Marwada* (Rajasthan) having reddish yellowish color is commercially called *Kana Googal* and which is found in *Sindha* and *Kutch* (Gujarat) is called *Bhesha Googal*, having dark greenish yellow color.

Vagbhata mentions that long term and higher dose administration of *Guggulu* may lead to *Timir* (Blindness), *Vadanshosh* (Dryness Of Mouth), *Klibata* (Impotency), *Karshya* (Emaciation), *Moha* (Delusion), *Shamal Shithil Bhava* (Diarrhoea), *Deha Raukshya* (Dryness Of Skin) etc. *Guggulu* is an oleo-gum-resin, which is an exudate of plant *Commiphora mukul*. This plant belongs to the family Burseraceae. It has wide distribution in North, Western India, particularly Rajasthan, Gujarat, Maharashtra and Karnataka. *Guggulu* is found throughout the subcontinent of India, the Middle East and Africa, particularly in dry arid locales.

### Chemical Composition

*Guggulu* is the complex mixture of Steroids, Diterpenoids, Aliphatic Esters, Carbohydrates and varieties of inorganic ions. From the gum resin sesamin, cholesterol, few other steroids, essential oil containing steroidal ketones, alcohol and aliphatic triols (mostly as esters of ferulic acid) were reported. The structural elucidation of steroidal constituents viz. *Z-Guggulsterone*, *E-Guggulsterone*, Five new sterols *Guggulsterols* - I, II, III, IV, & V have been established along with partial synthesis of *Guggulsterol* - II from diosgenin. In addition, diterpenoid constituents cembrene - A and Mukulol. Some fatty tetrols and octadecan - 1, 2, 3, 4 - tetrol, eicosan-1, 2, 3, 4-tetrol and nonadecan-1, 2, 3, 4-tetrol were reported. The other chemical compounds reported are myrcene, dimyrcene and polymyrcene (from essential oil of resins) along with sugars (in the gum) and aldobiouronic acid; myricyl alcohol,  $\beta$ - sitosterol, fifteen amino acids viz., cystine, histidine, lysine, arginine, aspartic acid, serine glutamic acid, threonine, alanine, proline, tyrosin, tryptophan, valine, leucine and isoleucine along with sugar sucrose, glucose and fructose;  $\alpha$ -camphorene, cembrene and allycembrol; cembrene-A (structure of); flavanoids viz., quercetin, quercetin-3-O- $\alpha$ -L-arabinoside, quercetin-3-O- $\alpha$ -D-galactoside, quercetin-3-O- $\beta$ -L-rhamnoside, quercetin-3-O- $\beta$ -D-glucuronide along with the other components like ellagic acid and pelargonidin-3, 5- di-O-glucoside from the flower. Some steroidal components i.e. pregnenones-I, - II & - III (*Guggulsterol*-VI) were isolated from the gum resin of the drug and the structure of the new compound III was detected. Seed oil contains linoleic, oleic, stearic and palmitic acids, while unsaponifiable matter contains sitosterol, stigmasterol, cholesterol, campesterol and  $\alpha$ -spinasterol. *Z-Guggulsterone* was reported from the oleo-resin.

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### CONCLUSION

There are 185 existing species of genus *Commiphora*. In India only 6 species are available i.e. *Commiphora mukul*, *Commiphora myrrha*, *Commiphora berryi*, *Commiphora stocksiana* and *Commiphora agallocha*. Out of these 6 species, *Commiphora mukul* is good producer of *Guggulu* whereas *Commiphora berryi* is usually used as a hedge plant all over South India and regionally known as *Mulkiluvai*.

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