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Ayurvedic And Modern Aspects Of Guggulu W.S.R. To Its Pharmacological Action.

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ABSTRACT

The *Ayurvedic* medicines are gaining increasing popularity for the treatment of various ailments in recent times. The global search is concentrated on phytochemical and pharmacological analysis of herbal and herbal products. One of the commonly used drugs of herbal origin is *Guggulu* (*Commiphora wightii*) which is mainly used as popular medication for the treatment of Obesity, Hyperlipidemia and Osteoarthritis etc. It has been used extensively by *Ayurvedic* physicians for centuries to treat a wide variety of disorders, besides its use in pharmaceutical and perfumery industries. *Guggulu* is an oleo-gum resin obtains from the trunk of *Commiphora wightii* plant in *Shishir* (Late winter) and *Hemanta ritu* (early winter). *Guggulu* is a shrub or small tree belonging to *Burseraceae* family. *Guggulu* contains volatile oil, gum resin, guggulipids, guggulsterones, guggulsterols, mukolol and other steroids. The oleo-gum or the resin part of *guggulu* obtained from stem is the main part which is used. In *Ayurveda*, It is the best among herbs that are used for *Medoroga* and *Vata* disorders. It is also known as fat burning agent all over the globe. It helps to lowering cholesterol and triglycerides level. It is also one of the most significant *Rasayana* of *Ayurveda*.

Keywords: Guggulu, Phytochemical, Oleo-gum, Obesity, Guggulsterone, Rasayana

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INTRODUCTION

Traditional medicines are gaining popularity worldwide for the treatment of various diseases. Even there is a growing interest in research on *Ayurvedic* science. One among the many drugs used in formulation to cure disease is *guggulu*. *Guggulu* is a one of the significant *dravya* (drug) mentioned in *Ayurvedic Samhitas* which means “Protection against Diseases” (1). Detailed descriptions regarding the dose, Mode of actions & therapeutic indications as well as types of *guggulu* have been described in various *Ayurvedic Granthas*. *Guggulu* has natural cholesterol lowering substances (2). Raw resin is noxious in nature (3) and hence purified *Guggulu* used for medicinal purpose. *Guggulu* has been use for medicinal purpose since *vedickala*(4). *Guggul* produces a resinous sap known as gum *Guggulu*. The extract of this gum called *gugulipid* has been used in *Ayurvedic* medication abundantly (5). *Guggulu* contains essential oil, resin, gum, and bitter compounds. The major chemical constituents of *gugglu* are Z-guggulsterone, E-guggulsterone, guggullignans I & II, guggulu tetrols; mukulol; allylcembrol;

C-27 guggulsterols I, II, III; Z-guggulsterol; E-guggulsterol etc (5). *Guggulu* has been used in pacifying numerous ailments and it has a wide range of action when compared to other drugs, the major action being to lower the cholesterol and triglycerides level and in mollifying joint diseases and obesity(6).

MATERIAL AND METHOD

A critical review study on *Guggulu* was carried out by following points:

Classical Review

Guggulu is one of the ancient *Ayurvedic* drug described in the *Atharva veda* which mentions its use as a *dhupa* (fumigant). Here it has been mentioned that ailment like *yaksma* will not spread to the places where the fumigation of *guggulu* is done (7). It was a well known *dhupana dravya* (fumigating agent) and also used for treating disease of the cattle (7). It is observed that the internal usage of *Guggulu* increased during *Samhita* period only (8).

References of *Guggulu* are as follow:-

S. No	Category	Text
1	<i>Rasayana Varga(9)</i>	<i>Harita samhita</i>
2	<i>Sangyasthapana Gana(10)</i>	<i>Charaka samhita</i>
3	<i>Eladi Gana(11)</i>	<i>Sushruta samhita</i>
4	<i>Eladi Gana(12)</i>	<i>Ashtang Sangrah</i>
5	<i>Karpooradi Gana(13)</i>	<i>Shaligram Nighantu</i>
6	<i>Karpooradi Varga(14)</i>	<i>Madanpala Nighantu</i>
7	<i>Chandanadi Gana(15)</i>	<i>Raj Nighantu</i>
8	<i>Rasayana karma(16)</i>	<i>Sharangdhara Samhita</i>
9	<i>Chandanadi Varga(17)</i>	<i>Dhanwantri Nighantu</i>
10	<i>Aushadadi Varga(18)</i>	<i>Kaiydev Nighantu</i>
11	<i>Karpooradi Varga(19)</i>	<i>Bhavprakash Nighantu</i>

Synonyms: Some peculiar Synonyms and their meaning are as follow (20):-

1.	<i>Guggulu</i>	Protects from disease.
2.	<i>Devdhup</i>	Loving to God.
3.	<i>Devavriksha</i>	Having special power that of God.
4.	<i>Kaushik</i>	One that resides in the bark of the tree
5.	<i>Pur</i>	having leading role in treating disease
6.	<i>Mahishaksha</i>	blakish similar as eyes of buffalo
7.	<i>Kasha</i>	use in Lekhan karma
8.	<i>Shiva</i>	One that is beneficial.

Properties: (21)

1.	<i>Rasa</i>	<i>Tikta, Katu</i>
2.	<i>Guna</i>	<i>Laghu, Ruksha, Vishada, Sukshma, Sara</i> (Properties of <i>Purana Guggulu</i>), <i>Snigdha</i> and <i>Picchila</i> (Properties of <i>Nava Guggulu</i>)
3.	<i>Virya</i>	<i>Ushna</i>
4.	<i>Vipaka</i>	<i>Katu</i>
5.	<i>Karma</i>	<i>Tridosahara, Rasayana, Vrishya</i> (Properties of <i>Nava Guggulu</i>), <i>Lekhana</i> (Properties of <i>Purana Guggulu</i>)
6.	Part Used	Oleoresin /Gum
7.	Dosage	2-4 gms

Sangraha Kala (Collection):

In *Grishma ritu* (Summer seasons), under the influence of sunrays, *Guggul* is secreted in large quantity from trees and collected in *Shishir* (cold seasons) and *Hemanta ritu* (cold season) (22).

Grahya Guggulu Lakshana (Acceptable Properties):

Snigdha (Oily), *Picchila* (Sticky), *Madhura Gandhi* (sweet odour), *Tikta* (bitter), *Pitabha* (yellowish), water dissolving tendency are the properties of *Grahya Guggulu* (Acceptable Guggulu) (23).

Varieties of Guggulu:

Atharvaveda Classified *Guggul* in two categories (24):-

- (1) *Nadi Sameepottha* that means which is found near the Sindhu River.
- (2) *Samudra Sameepottha* that means which is found near the ocean

Bhavamishra described five varieties of *Guggulu* (25):-

- (1) *Mahishaksha* - *Mahishaksha* has the colour of honey-bee or *Anjana* (antimony sulphide).
- (2) *Mahanila* - *Mahanila* is similar to its name and looks like a Sapphire, a precious stone.
- (3) *Kumuda* - *Kumuda* resembles *Kumuda* flower (white) in colour.
- (4) *Padma* - *Padma* resembles *Manikya* (ruby red).
- (5) *Hiranya* - *Hiranya* is like gold in color.

Other two varieties of *Guggulu* have mentioned in the texts books of *Ayurveda*:

- (1) *Nava Guggulu*
- (2) *Purana Guggulu*

Nava Guggulu is useful in debility, whereas the old variety- *Purana Guggulu* is salutary in obesity and diabetes (26), (27).

Purification of Guggulu:

Need of Purification:

- 1) To remove external and internal impurities.
- 2) To increase medicinal properties.

Process of Sodhana:

- (1) Sand stone, glass etc. are first removed.
- (2) It is then broken into small pieces.
- (3) It is thereafter bundled in a piece of the muslin cloth and boiled in Dola Yantra containing any one of the following fluids. (AFI PART 2ND FIRST EDITION)
 - (a) Gomutra
 - (b) Triphala Kashaya.
 - (c) Vasapatra Kashaya.
 - (d) Vasapatra Swarasa.

- (e) Nirgundi patra Swarasa with Haridra churna
- (f) Dugdha

Traditionally *Guggulu* is purified in *Triphala kvatha* or *Gomutra* for 3 hours (in *Dola Yantra*) and then fried with ghee before administered internally. According to *Nighantu Ratanakar* decoctions of *Guduchi*, *Triphala*, and *Dashmool* are to be used for purification (28).

Macroscopic and Microscopic Features:

a) Macroscopic: Drug occurs in vermicular pieces of pale yellow or brown coloured mass, makes milky emulsion in hot water and readily burns, when fresh viscid and golden coloured, odor; aromatic, taste is bitter and astringent.

b) Microscopic: Foreign matter Not more than 4 %; Total Ash Not more than 5 %; Acid-insoluble ash Not more than 1%; Alcohol-soluble extractive Not less than 27 %; Water-soluble extractive Not less than 53%; Volatile oil Not less than 1%, v/w (29).

Chemical Constituents: (30)

In its chemical composition volatile oil, resins, gum and a bitter compound is found. *Guggulu* resin is produced more abundantly and is stronger during winter and summer.

Gum resin	Flower
Sesamin	Myrcyalcohol
Steroids	Betaritosterol
Essential oil	Amino acids
Guggul sterol	Sugars
Guggulosterone	Alpha-caphorene
Myrcene	Cembrene
Dimercene	Allylsembrol
Myrcyalcohol	Flavonids
	Ellagic acid

Pharmacological Action: (31)

In *Ayurveda* there is no mention of concept Cholesterol but our classical texts prescribed *Guggulu* for the management of *Medoroga* (Obesity) and this is very closely resembles with the symptoms of High cholesterol. Guggulsterones blocks the activity of Farnesoid X receptor so the feedback inhibition of cholesterol 7a hydroxylase activity is released, leading to augment in the bile acid synthesis. This augmented diversion of cholesterol in to bile acid synthesis causes an apparent decrease in the pool of intracellular cholesterol and is used in the treatment of Atherosclerosis. An anti-inflammatory action has also been shown by guggusterones.

Adultration:

Gum *Boswellia serrata* (*Shallaki*) and *Hymenodictyon excelsum*, *Albizia lebbeck* (*Shirish*), *Butea monosperma* (*Palash*), *Moringa olifera* (*Sehzan*), *Acacia Nilotia* (*Babbul*) and *Acacia catechu*(*Khair*) are used as common adulterants in the gum resin of *Guggulu* (32). So the resin must be tested for quality described in text before use.

Medicinal Uses:

The “*Niryasa*” means gum-oleo resin, of the *Guggulu* plant is used for medicinal purpose, both internally as well as externally (33).

Sthaulya(Obesity)	In obesity, use of <i>Rasanjana</i> , <i>Brahat Panchmula</i> , <i>Guggulu</i> , <i>Shilajatu</i> and <i>Agnimantha</i> is beneficial (34). In case obesity has set in, one should use regularly <i>Shilajatu</i> , <i>Guggulu</i> , <i>Gomutra</i> , <i>Triphala</i> , <i>Lauha-Bhasma</i> , <i>Rasanjana</i> , honey, barley, <i>Mudga</i> , <i>Kodrava</i> , <i>Shyamaka</i> , <i>Vanakodrava</i> etc. which are rough and reduce fat (35).
Udara Roga	One should use <i>Guggulu</i> as <i>Shilajatu</i> is used i.e. use of <i>Guggulu</i> with milk is beneficial in <i>Udar roga</i> (36). Use of <i>Shilajatu</i> , <i>Gomutra</i> , <i>Guggulu</i> , <i>Triphala</i> , and <i>Snuhi</i> latex alleviates <i>Udararoga</i> (37).
Shotha (Edema)	One should use <i>Guggulu</i> with <i>Gomutra</i> or decoction of <i>punanava</i> (38). <i>Guggulu</i> or <i>Haritaki</i> should be used with <i>gomutra</i> (39). <i>Guggulu</i> destroys oedema taken with decoction of <i>Punarnava</i> , <i>Devdaru shunthi</i> or <i>Gomutra</i> or <i>Dashmula</i> decoction (40). Those suffering from oedema should use <i>Guggulu</i> with <i>Go-mutra</i> or <i>Pippali</i> with milk or <i>Haritaki</i> or <i>Shunthi</i> mixed with jiggery (40).
Vata Vyadhi	Use of all <i>Rasayanas</i> particularly of <i>Shilajatu</i> and <i>Guggulu</i> with milk is beneficial (41). <i>Guggulu</i> is the best remedy for <i>Vata</i> covered by <i>Medas</i> (42). <i>Gridhasi</i> (Sciatica): <i>Rasna</i> 40 gm and <i>Guggulu</i> 200 gm are pounded with ghee and made into pills. It alleviates sciatica (43). <i>Krostushirsha</i> (arthritis of knee joint): In <i>Krostushirsha</i> , <i>Guggulu</i> or <i>Guduchi</i> with <i>Triphala</i> decoction; or castor oil or <i>Vridhdharuka</i> with milk should be taken (44).
Urustambha	<i>Guggulu</i> with <i>Gomutra</i> is a good remedy for <i>Urustambha</i> (45). In <i>Urustambha</i> , one should take <i>Shilajatu</i> or <i>Guggulu</i> or <i>Pippali</i> or <i>Shunthi</i> with <i>Gomutra</i> or decoction of <i>Dashmula</i> (46).
Amavata (Rheumatoid arthritis)	One should use regularly <i>Haritaki</i> , <i>Guggulu</i> , and <i>Shilajatu</i> with go-mutra (47). Intake of <i>Guggulu</i> with equal quantity of <i>Trikatu</i> , <i>Chitraka</i> , <i>Musta</i> , <i>Triphala</i> , and <i>Vidanga</i> destroys all disorders caused by <i>Medas</i> , <i>Kapha</i> and <i>Amavata</i> (47).
VataRakta (Gout)	The diseases can be controlled by regular use of <i>Shilajatu</i> , <i>Guggulu</i> and honey (48). Use of all <i>Rasayanas</i> particularly of <i>Shilajatu</i> and <i>Guggulu</i> with milk is beneficial (49).
Vidradhi (Abscess)	The patient should use <i>Shilajatu</i> , <i>Guggulu</i> , <i>Shunthi</i> , and <i>Devdaru</i> with decoction of the group of drugs according to (predominance of) <i>Dosha</i> (50). In all types and conditions of abscess, <i>Guggulu</i> should be used with suitable decoctions (according to <i>Dosha</i>). Similarly should be used <i>Shilajatu</i> (51). In abscess caused by <i>Vata</i> , <i>Guggulu</i> or castor oil should be taken (52). In case of <i>Kaphaja Vidradhi</i> , one should take <i>Guggulu</i> with decoction of <i>Triphala</i> , <i>Shigru</i> , <i>Varuna</i> , <i>Dashmula</i> or with <i>Gomutra</i> (53).
Wound	<i>Guggulu</i> and <i>Triphala</i> is one of the great combinations in treating, orally, the non-healing chronic wounds (54). Anti-inflammatory and antiseptic properties of <i>Guggulu</i> are beneficial in cleansing and healing of wounds and to reduce oedema. For such, the paste of its gum is applied in the cases of gout, rheumatic joints, glandular swelling and even piles (55).
Vridhhi Roga (Scrotal enlargement)	One should take <i>Guggulu</i> or castor oil with <i>Gomutra</i> . By this chronic scrotal enlargement caused by <i>Vata</i> is destroyed (56).
Foetid ear	Fumigation with <i>Guggulu</i> is a good remedy (57).
Bronchial Asthma	<i>Shallaki</i> , <i>Guggulu</i> , <i>Aguru</i> and <i>Padmaka</i> mixed with ample ghee is used for fumigation (58).
Amlapitta	Use of <i>Guggulu</i> with decoction of <i>Vasa</i> , <i>Nimba</i> , <i>Patola</i> , <i>Triphala</i> and <i>Guduchi</i> controls <i>Amlapitta</i> having predominance of <i>Kapha</i> (59).

Apathya:

During the administration of *Guggulu* the patients should be advised not to take *Amla rasa*(sour), *Tikshna guna* (sharp quality) predominant drug and diet, *Madya* (alcohol), *Ajirna bhोजना* (indigestion), *Vyayama* (exercise), *Atapasevana* and *Krodha* (Anger) (60).

Side Effects of Guggulu:

According to *Priya nighantu*, excess dose of *Guggulu* leads to *Klaivaya* (impotency), *Mukhshosh* (dryness of mouth), *Timira* (cataract), *Krishta* (loss of weight), *Murcha* (vertigo) and *Atisara* etc. *Guggulu* should not be used in patients with above complaints (61).

Vridha Vagbhata described that about 1 Tula (100 *Palas*) of *Guggulu* may be consumed for *Rasayan* purpose. If administered in extensive quantities side effects like: *Timira* (cataract), *Klavaiya* (impotency), *Krishta* (weight loss), *Murcha* (syncope), *Shathilya* (laxity of tissue), *Roukshya* (dryness) may develop (62).

Important Formulation: (62), (63)

A) Herbal Formulation of Guggulu: Panchatikta Guggulu Ghrita, Simhanada Guggulu, Navaka Guggulu, Amritadi Guggulu, Kanchanar Guggulu, Gokshuradi Guggulu, Aabha Guggulu , Lakshadi Guggulu, Yograj Guggulu and Shatdharana yoga etc.

B) Herbo-Mineral Formulation of Guggulu: Mahayograj Guggulu, Chandraprabha Vati, Aarogyavaradhini Vati etc.

DISCUSSION

In this article, therapeutic properties of *Guggulu* are described. Here various synonyms of *Guggulu* as well as their significance are elaborated. *Guggulu* word itself means "Protection from disease". In *Bhavprakasha* types of *Guggulu* mentioned according to colour of *Niryas* (resin). In *Sushruta samhita*, difference between *Nava* and *Purana Guggulu* has been mentioned. There are possibilities of adulteration in *Guggulu* so *guggulu* must be tested for *Grahya-Agrahyatwa* as mentioned in classical text. *Shodhan* (purification) of *Guggulu* is necessary for removal of impurities and to increase medicinal properties. In treatment of different disease

Guggul given with different anupan (A liquid which is taken with drug) as mentioned in *samhitas*. *Guggulu* has natural cholesterol lowering substances. *Guggulu* is used as anti-inflammatory, astringents, carminative, antiseptic, Hypoglycemic etc. Dose of *Guggulu* is 2-4 gms can be given as mentioned in *samhitas*.

CONCLUSION

The characteristics of *Guggulu* are found scattered in *Ayurvedic samhitas*. While using medicinal purpose it is very important to study in detail about *Guggulu*. The synonyms given are suggestive of its therapeutic activities. *Guggulu* is a multi-purpose drug because of its magical properties; it is very beneficial in numerous ailments. It has several uses which are supported by various researches done by researchers throughout the globe. This article will helpful in giving scattered information regarding *Guggulu* under one roof.

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