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Pharmaceutico - Analytical Study of *Triphala Guggulu*

Gandhi TN,[1] Gupta SN,[2] Patel MV,[3] Kalsariya BD[4]

[1]Post Graduate Scholar, [2]Professor & Head, [3]Professor, Department of Kayachikitsa, Reader, Department of Rasashastra evam Bhaishajya Kalpana, J. S. Ayurved Mahavidyalaya, Nadiad, Gujarat, India.

ABSTRACT

There are many formulations mentioned in Ayurvedic classics to treat various disease used as internally as well as external applications, *Guggulu Kalpana* is one of them. It is a very popular, safe and effective formulation for mitigation of *Tridosha* mainly *Vatadosha*. Two methods for preparation of *Guggulu Kalpana* areused; 1. *Kuttana* (pounding) and 2. *Analapaka* (heating). Mostly small production of *Guggulu Kalpana* is made by *Kuttana* and large production is made by *Analapaka*. Amidst of all *Guggulu Kalpana*, *Triphala Guggulu* is one of the most momentous and widely used in *Vrana Shodhana* and *Vrana Ropana Karma* in practice. *Triphala Guggulu* is indicated in *Bhagandara*, *Gulma*, *Shotha*, *Arsha*, *Vatarakta*, *Kushtha*, *Pakva-vidradhi*, *Gandamala*, *Asthibhagna* which is described in *Sharangdhara Samhita*, *Yogaratnakara* and *Bhavaprakasha*. Three batches of *Triphala Guggulu* were prepared with reference of *Sharangdhara Samhita* and follow the in house quality control parameters to standardized the medicine in large scale production by heating method. The size of *Triphala Guggulu* was form 10.27mm to 10.28mm in diameter, pH 5.9 to 6.2, loss on drying 0.8% to 1.6%, ash value 6.0%w/w to 7.5%w/w, acid-insoluble ash value 0.8%w/w to 1.2%w/w, alcohol-soluble extractive value 16.4%v/w to 30.2%v/w and water-soluble extractive value 32.0% to 38.0%. Phytochemical screening of *Triphala Guggulu* shows that Glycoside, Amino acid, Protein, Carbohydrate, Flavanoid, Tannin, Steroid, Saponin and Alkaloid were present in all batches. On the basis of this study it is clear that, if we follow the same procedure with authentic drugs then large scale production also have quality assurance.

Key words: *Guggulu Kalpana, Triphala Guggulu, Quality Assurance.*

INTRODUCTION

Today Ayurveda is very popular among whole traditional science / holistic health care because of its principles, treatment aspect and different preparations. In Ayurveda there are several medicinal preparations like *Swarasa, Kalka, Kwatha, Hima, Phanta, Avaleha, Guggulu* etc. Among all these, *Guggulu Kalpana* is one of the most useful and most prescribed herbal formulation in various disease. *Guggulu Kalpana* is prepared by two methods; one is *Kuttana* (pounding) and another one is *Analapaka* (heating). Both methods may be used in small and large scale production but *Kuttana* method is mainly used for small scale preparation where as *Analapaka* method is mainly used for the large scale. There are so many *Guggulu* formulations used in practise like *Yogaraja Guggulu, Kaishora Guggulu, Sinhnada Guggulu, Triphala Guggulu, Abha Guggulu, Kanchnara Guggulu, Punarnava Guggulu* etc. Amidst of all *Triphala Guggulu* is one of the most important and widely used in *Bhagandar* (Fistula), *Gulma, Shotha, Arsha, Vatarakta* (gout), *Kushtha* (Leprosy), *Pakva-vidradhi* (Abscess), *Vranaropana* (Wound healing), *Gandamala* (goiter), *Asthibhagna* (fractures); which is mentioned in *Sharangadhara Samhita,*[1] *Yogaratnakar*[2] and *Bhavaprakasha.*[3] *Guggulu* is exudate of *Commiphora wightii* and many physical

Address for correspondence:
Dr. Gandhi T. N.
Post Graduate Scholar, Department of Kayachikitsa,
J. S. Ayurved Mahavidyalaya, Nadiad, Gujarat, India.
E-mail: tngandhi77@gmail.com

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impurities get stuck to it hence *Guggulu* purification become important procedure. Mostly *Guggulu* purification is done in decoction of *Triphala* and *Analapaka* is used to prepare the various *Guggulu*. So here we made *Triphala Guggulu* with the help of *Analapaka* and analysed its organoleptic, physical, physico-chemical and phyto-chemical parameters.

Materials and Methods

Preparation of *Triphala Guggulu*

Raw drugs of *Triphala Guggulu* were identified and authenticated by the drug selection committee of Sundar Ayurveda Teaching Pharmacy, then prepared the *Yavakuta* (coarse powder) of *Triphala* and *Pippali* by hammer mill, then prepared the *Churna* (fine powder) by the pulveriser and sieved it (sieve no. 80) by sieving and grinding machine. *Guggulu Shodhana* was done by *Triphala Kwatha*.

Table1: Contents of *Triphala Guggulu.*

SN	Name of ingredient	Latin name	Part used	Proportion
1	*Guggulu*	*Commiphora wightii*	Oleo gum resin	5
2	*Haritaki*	*Terminalia chebula.*	Pericarp	1
3	*Bibhitaki*	*Terminalia bellerica*	Pericarp	1
4	*Amalaki*	*Emblica officinalis.*	Pericarp	1
5	*Pippali*	*Piper longum.*	Fruits	1

Churna of *Triphala* and *Pippali* were homogeneously mixed in mass mixer. Then *Shuddha Guggulu* was added in it and prepared doughy mass and subjected for granulation by granulator. After drying of granules prepared the 300 mg tablet through tablet punching machine.

Analytical Study

For the in house quality control of *Triphala Guggulu*, the Organoleptic parameters like colour, odour, taste, shape, pH,[4] size,[5] physical parameters like weight variation, hardness, friability, disintegration time; physicochemical parameters i.e. ash value,[6] acid-insoluble ash value,[7] alcohol / water soluble extractive values,[8] loss on drying and Phytochemical screening was done.

Observation and Results

Table 2: Showing the yield of different batches of *Triphala Guggulu.*

SN	Drug name	Batch-1	Batch-2	Batch-3
1	*Haritaki*	4 kg	4 kg	4 kg
2	*Bibhitaki*	4kg	4kg	4kg
3	*Amalaki*	4 kg	4 kg	4 kg
4	*Pippali*	4kg	4kg	4kg
5	*Guggulu*	20 kg	20 kg	20 kg
	Yields	22 kg	20 kg	23 kg

Table 3: Showing the Organoleptic parameters of *Triphala Guggulu.*

SN	Parameters		Batch-1	Batch-2	Batch-3
1	Colour		Dark Green	Dark Green	Dark Green
2	Odour		Pungent	Pungent	Pungent
3	Taste		Slightly bitter	Slightly bitter	Slightly bitter
4	Shape		Round-flat	Round-flat	Round-flat
5	pH (10% aqueous solution)		6.1	6.2	5.9
6	Size	Diameter	10.27mm	10.28mm	10.28mm
		Thickness	3.15mm	3.16mm	3.16mm

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Table 4: Showing the Physical parameters of *Triphala 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	19	19	17
		No. of tablets not within allowable limit	01	01	03
2	Hardness		0.5 kg/cm	0.5 kg/cm	1.0 kg/cm
3	Friability		0.6%	0.7%	0.4%
4	Disintegration time		33 min	32 min	22 min

Table 5: Showing the Physicochemical parameters of *Triphala Guggulu*.

SN	Parameters	Batch-1	Batch-2	Batch-3
1	Ash Value (% w/w)	6.1% w/w	6.0% w/w	7.5% w/w
2	Acid-insoluble Ash value (%w/w)	0.8% w/w	0.9% w/w	1.2% w/w
3	Alcohol soluble extractive value %(v/w)	16.4%v/w	26%v/w	30.2%v/w
4	Water soluble extractive value (% v/w)	33.9% v/w	32% v/w	38.0% v/w
5	Loss on Drying (%)	1.2%	0.8%	1.6%

Table 6: Showing the Phytochemical screening of *Triphala Guggulu*.

SN	Parameters	Batch-1	Batch-2	Batch-3
1	Glycoside	Present	Present	Present
2	Amino acid	Present	Present	Present
3	Protein	Present	Present	Present
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

Guggulu is mentioned in *Brihatrayi* in wide perspective i.e. *Raspanchak, Matra, Sevana Kala* and *Yogavahi Guna* etc.[9],[10],[11],[12] Various *Guggulu Kalpana* are used in most of all *Vatavyadhi* (disorder due to *Vatadosha*), Obesity, Hyperlipidaemia, Osteoarthritis, Metabolic and degenerative disorder of connective tissue and joint problem etc. because of its action as *Tridosha Shamaka* (mitigation of *Tridosha*) as well as *Rasayana Karma*. *Triphala Guggulu* is mainly possessing *Vranashodhana* and *Vranaropana* properties. The *Triphala Guggulu* prepared by the heating methodin large scale by using the reference of *Sharangdhar Samhita*. Different ingredients of *Triphala-Guggulu* which are mentioned in different classics reveal in Table 7.

Table 7: Ingredients of *Triphala Guggulu* mentioned in classics

SN	Drugs	*Sh. Sm.*	*BM*	*YR*
1	*Haritaki*	✓	✓	✓
2	*Bibhitaka*	✓	✓	✓

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3	*Amalaki*	✓	✓	✓
4	*Pippali*	✓		✓
5	*Guggulu*	✓	✓	✓
6	*Ativisha*		✓	
7	*Devdaru*		✓	
8	*Darvi*		✓	
9	*Parushaka*		✓	
10	*Khadira*		✓	
11	*Asana*		✓	
12	*Nisha*		✓	
13	*Guduchi*		✓	
14	*Aragvadha*		✓	
15	*Bhuhunimba*		✓	
16	*Nimba*		✓	
17	*Katuka*		✓	
18	*Kalinga*		✓	
19	*Kulaka*		✓	

Sh. Sm. - Sharangdhar Samhita, BM - Bhavamishra, YR - Yogaratnakar

Haritaki, Bibhitaka, Amalaki and *Pippali* were taken 4 kg each and *Guggulu* 20kg to formulate the *Triphala Guggulu* and average yield was 21.67 kg obtained. Colour of *Triphala Guggulu* was dark green with pungent smell, slightly bitter taste and round-flat shape (table 3) found. The average size of *Triphala Guggulu* was 10.28mm in diameter and 3.16mm in thickness, 6.07 pH, 0.67 kg/cm hardness, 0.57% friability, 29 min. disintegration time, loss on drying 1.2 %, ash value 6.53%w/w, 0.97%w/w acid-insoluble ash value, 24.2%v/w alcohol soluble extractive value and 34.63%v/w water soluble extractive value (table 5). Phytochemical screening shows that Glycoside, Amino acid, Protein, Carbohydrate, Flavanoid, Tannin, Steroid, Saponin and Alkaloid were present in all the batches (table 6).

Conclusion

The study reveals that sufficient quality control parameters were followed during the preparation of *Triphala Guggulu*. Organoleptic, physical, physico-chemical parameters and preliminary phytochemical screening analysis were carried out for the Quality assurance of the formulation. On the basis of this study it's clear that, if we follow the same procedure with authentic drugs then large scale production also having Quality product.

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