

## Physicochemical Analysis of *Simhanada Guggulu Pill*

Saroj Kumar Debnath<sup>1\*</sup> and Sudhaben N. Vyas<sup>2</sup>

<sup>1</sup>Ayurveda Regional Research Institute, Gangtok, Sikkim. Unit of Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Government of India

<sup>2</sup>Department of Kayachikitsa, Institute for Post Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

### Abstract

It is being globally recognized that medicinal plants play an important role for providing health benefits to human beings. Maximum Ayurvedic drugs are plant based drugs. The complex composition of plant based drugs has a big challenge for quality control. Physicochemical analysis is the most important part for standardization of the plant base drugs. One most important Ayurvedic drug i.e. *Simhanad Guggulu* pill had been selected from Ayurvedic famous book named *Bhaishajya Ratnavali* for the Physicochemical analysis. It is mainly and commonly used in the treatment of disease *Amavata* (Rheumatoid arthritis). Drug preparing and Physicochemical analysis both had been done in the Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar. The Physicochemical study revealed that the *Simhanad Guggulu* pill contained sterol, less moisture, more inorganic constituents and less water soluble constituents.

**Keywords** *Simhanad Guggulu, pill, Physicochemical, Amavata, Rheumatoid arthritis*



**Greentree Group**

Received 07/08/15 Accepted 24/08/15 Published 10/09/15

## INTRODUCTION

It is being recognized globally that the medicinal plants play an important role for providing health benefits to human beings. The gradual increased demand for plant based drugs and their eventual commercialization has given a more concentration on their status. Maximum Ayurvedic drugs are plant based drugs. But global acceptances of Indian plant based drugs are still low and perhaps inadequacy of quality control is the most important responsible factor for this. The complex composition of plant based drugs is a big challenge for quality control. These days Physicochemical analysis is the most important way for standardization of the plant based drugs. Many plant based drugs are described in Ayurvedic texts in context of treatment purpose of different diseases. One most important Ayurvedic drugs i.e. *Simhanad Guggulu* pill had been selected from Ayurvedic book for the Physicochemical study.

**Objectives:** To analysis the Physicochemical data of the *Simhanad Guggulu* pill.

## MATERIALS AND METHODS

*Simhanad Guggulu* pill is mainly and commonly used by the Ayurvedic physician's in the treatment of disease *Amavata* (Rheumatoid arthritis). *Amavata* disease is more simulated to Rheumatoid arthritis according to its clinical features and pathogenesis<sup>1, 2</sup>. *Simhanad Guggulu* pill is mentioned in *slokas* no. 190 to 195 of 29<sup>th</sup> chapter of *Bhaishajya Ratnavali* (Ayurvedic book)<sup>3</sup>. *Simhanad Guggulu* pill was prepared and its physicochemical study of was carried out in the Pharmacy of Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar the Pharmaceutical Laboratory of Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar. Uniformity of tablet/pill (weight variation) (average weight), Hardness of tablet/ pill (average), Disintegration time of tablet/pill, Determination of Loss on drying at 110 °C, Ash value (% of total ash), Acid insoluble ash value, Water soluble extractive value and Methanol soluble extractive value of *Simhanad Guggulu* pill had been observed for Physicochemical analysis<sup>4,5</sup>. *Simhanad Guggulu* pill is a herbo-mineral Ayurvedic drug and six ingredients are used in it. Out of six ingredients five are herbal ingredients

and one is mineral ingredient<sup>6,7</sup>. Name of the ingredients (Ayurvedic and Scientific name), used part of the ingredients and

quantity of used part of the ingredients into the one pill are shown in the **Table 1**.

S. No.	Ingredients (Ayurvedic name)	Scientific or Botanical name	Used part	Quantity (part)
1.	<i>Haritaki</i>	<i>Terminalia chebula</i> Retz.	Dried mature Fruit	1
2.	<i>Amalaki</i>	<i>Emblica officinalis</i> Gaertn.	Dried mature Fruit	1
3.	<i>Bibhitaka</i>	<i>Terminalia bellirica</i> Roxb.	Dried mature Fruit	1
4.	<i>Guggulu</i> ( <i>Shodhita</i> )	<i>Commiphora wightii</i> (Arnott) Bhandari	Gum exudates	1
5.	<i>Gandhak</i> ( <i>Shodhita</i> )	Sulphar	Mineral	1
6.	<i>Eranda taila</i>	<i>Ricinus communis</i> Linn.	Seed oil	4

## RESULTS AND DISCUSSION

Results of Physicochemical analysis is shown in the **Table 2**.

**Table 2** Data of Physicochemical parameters (Quantitative test) of *Simhanad Guggulu* pill

S. No.	Parameter	Result
1.	Uniformity of tablet (weight variation) (average weight)	502.5 mg
2.	Hardness of tablet (average)	1.55 kg./cm <sup>2</sup>
3.	Disintegration time of tablet	more than 1 hour
4.	Determination of Loss on drying at 110 °C	2.30 % W/W
5.	Ash value (% of total ash)	10.00 % W/W
6.	Acid insoluble ash value	2.40 % W/W
7.	Water soluble extractive value	28.10 % W/W
8.	Methanol soluble extractive value	22.20 % W/W

The data of the **Table 2** shows that the average weight of *Simhanada Guggulu* pill was 502.5mg, Hardness of the *Simhanada Guggulu* pill was 1.55 kg/cm<sup>2</sup>, Disintegration time of this pill was more than 1 hour, Loss on drying of this pill sample at 110 °C was 2.3 % W/W, and Ash value, Acid insoluble ash value, Water soluble extractive value and Methanol soluble extractive value of this pill sample were observed respectively 10% W/W, 2.40 % W/W., 28.1 % W/W., and 22.2 % W/W. On the basis of this information it can be said that the moisture holding capacity was

less in the sample of *Simhanada Guggulu* pill and hence there may be minimum chance of damage of the pill by moisture, so shelf life or storage capacity is not less in *Simhanada Guggulu* pill. Inorganic constituents were more in *Simhanada Guggulu* pill, because it was made by herbo-mineral ingredients, therefore Ash value was more. Water soluble constituents such as Sugars, Glycosides etc were less in *Simhanada Guggulu* pill, because Water soluble extractive value of its sample was less. *Guggulu* contains Sterol substance and it is soluble in alcohol therefore, Methanol soluble extractive value was more in the sample of *Simhanada Guggulu* pill.

## CONCLUSION

It can be concluded on the basis of this Physicochemical Analysis that the *Simhanada Guggulu* pill contained sterol, less moisture, more inorganic constituents and less water soluble constituents but more research work is necessary on the drug for more information and accuracy so that standardization of drug is feasible.

Authors are grateful to the Vice chancellor of the Gujarat Ayurved University, Jamnagar, the Director of the Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar and also grateful to the experts and staff of the Pharmacy and the Pharmaceutical laboratory of the Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar for their continuous support and cooperation for this study.

## ACKNOWLEDGEMENT

## REFERENCES

- 1) Madhavakara, Rakshita, V., Dutta, S., Shastri, S. (1996). Madhava Nidana with Madhukokosha Vyakya and Vidyotini Hindi Commentry (Part-I). Edited by Yadunandan Upadhyaya. Chaukhambha Sanskrit Sanathana. Varanasi. 26<sup>th</sup> edition. Page no. 460-464.
- 2) Harrison, T.R. (1998). Harrison's Principles of Internal Medicine (Vol-2). Edited by Anthony S. Fauci et al. Mc Graw-Hill. New-York. 14<sup>th</sup> edition. Page no. 1885.
- 3) Govindadassen (2005). Bhaishaijya Ratnavali with Siddhiprada Hindi commentary. Edited by Siddhi Nanda Mishra. Chaukhambha Surabharati Prakashan. Varanasi. 1<sup>st</sup> edition. Page no. 610.
- 4) Florence, A. T., Attwood, D. (2006). Physicochemical Principles of Pharmacy. Pharmaceutical Press. London. 4<sup>th</sup> edition.
- 5) Harborne, J. B. (1984). Phytochemical methods. Chapman and Hall, Landon, 2<sup>nd</sup> edition.
- 6) Sharma, P.V. (1986). Dravyaguna Vijnana (Vol. II). Chaukhambha Bharati Academy. Varanasi. 8<sup>th</sup> edition.
- 7) Chopra, R. N. (1959). Indigenous Drugs of India. U. N. Dhur and Sons Pvt. Ltd. Calcutta. 2<sup>nd</sup> edition.