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Macro-microscopic Differentiation of *Guduchi Satva* Samples Collected from Market

Guḍuchi satva is frequently used drug among Ayurvedic physicians for conditions such as *Jvara* (fever), *Daha* (burning sensation) and other *Pitta* predominant conditions. One laboratory sample of *Guduchi satva* was prepared by following classical method and four market samples were collected from different parts of country and efforts have been made to check organoleptic and microscopic characterization of the samples. The work has shown variations in randomly selected samples which may be due to collection of raw material from different seasonal and climatic conditions, differences in adapted method of preparation etc.

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Macro-microscopic Differentiation of *Guduchi Satva* Samples Collected from the Market

Paritosh Jha*, ¹Sonam Bhide, ²Harisha Channappa Rudrappa, Galib Ruknuddin, Pradeep Kumar Prajapati

All India Institute of Ayurveda, Sarita Vihar, New Delhi 110076. ¹Bhargava Ayurveda College, Dehemi, Anand, Gujarat 388560. ²Pharmacognosy laboratory, IPGT & RA, Gujarat Ayurved University, Jamnagar, Gujarat 361008, India.

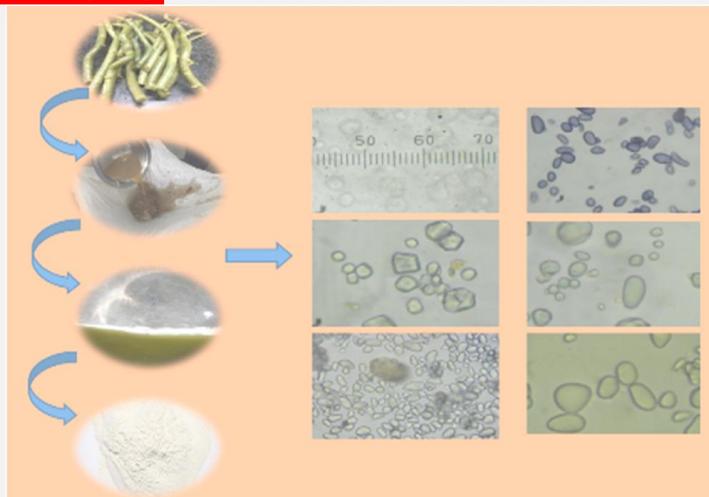
ABSTRACT

Background: *Guduchi Satva* is frequently utilized drug among Ayurvedic physicians for conditions such as *Jvara* (fever), *Daha* (burning sensation) and other *Pitta* predominant conditions. Because of its numerous medicinal attributes, many pharmaceutical companies are manufacturing this formulation. This article is intended to check the difference in organoleptic and microscopic features of *Guduchi Satva* being sold in the market. One sample was prepared in the laboratory, while, the other samples were collected from the market.

Methods: Five samples of *Guduchi Satva* were collected and organoleptic-microscopic features were recorded as per pharmacopoeial procedures. **Results:** More or less variation in *Guduchi Satva* samples was found. The reason could be difference in drug collecting area, season and using different references of preparation method. **Conclusion:** A consensus by all pharmaceutical companies for the use of identical classical reference in formula preparations by preparing monographs in AFI and API could solve the issue of differences from sample to sample. This article quest for the probable reason of variation and its solution.

KEYWORDS *Guduchi Satva*, Microscopy, Organoleptic examination, Quality control, Standardisation.

PICTORIAL ABSTRACT



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CORRESPONDENCE Paritosh Jha, Department of Rasa Shastra & Bhaishajya Kalpana, All India Institute of Ayurveda, Sarita Vihar, Mathura Road, New Delhi 110076, India. Email: paritoshjha32@gmail.com

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Guduchi satva (aqueous extract of *Tinospora cordifolia*) is time tested and widely used medicine in Ayurveda prescriptions. *Satva* or *Sara* of herbs is the essence or active part and here it refers to the water extractable solid substance collected from herbal drug.^[1] It can be considered as a secondary derivative of *Hima kalpana* (cold infusion) because a part of pharmaceutical process involved in it is analogous to *Hima kalpana*. Among all herbal *Satvas*, *Guduchi satva* is widely used formulation in Indian Systems of Medicine. Foremost citation of *Guduchi satva* is available in *Rasendra Mangalam*.^[2] Its pharmaceutical process is mentioned in *Yoga Ratnakara*,^[3] *Rasa Yoga Sagara*^[4] and *Siddha Yoga Sangraha*.^[5]

Classics have mentioned that a drug is most suitable for the person if it is cultivated or collected from their local areas; should be collected during seasons mentioned for the collection of particular part of drug; standard methods of preparations for almost every drug; and shelf-life of various forms of medicines. If one follows all above rules, chances of variation in final product can be possibly minimized.

India is providential to have vast knowledge of traditional herbal medicine. Although, during the past 20 years, herbal products have enjoyed resurgence among consumers throughout the world, one of the obstacles in their acceptance is the lack of uniform standard manufacturing protocols (SMPs). Maintaining the identical SMPs is an important step in the

process of wide spread acceptance of herbal drugs. Change in chemical constituent level even creates confusion in pharmacological activity of its organic constituents.

Guduchi satva is prepared as per classical methods by cutting and crushing fresh stems of *T. cordifolia* followed by soaking in six times of water for eight hours. It is properly macerated and filtered through cotton cloth. The filtrate is placed undisturbed to allow the starch to settle down, supernatant liquid is decanted and the sediment is further collected and dried. This is considered as laboratory sample of *Guduchi satva*. Besides, four market samples of *Guduchi satva* were collected from different parts of country and efforts have been made to check organoleptic and microscopic characterization of the samples.

All samples showed whitish tint, but still there is variation in color between each sample. In *Rasa Yoga Sagara*, the color of *Satva* is mentioned as *Subhrakhaṇḍanibha* (clear white like sugar cubes) and *Yoga Ratnakara* explains it as *Sankhanibha* (clear white like conch shell). Recent texts mention it as greenish white or grayish white^[6] in color. These

indicate that change in color could be acceptable if it is prepared with different references.

There is difference in taste between all five samples starting from ‘tasteless’ to ‘moderately bitter’. This type of variation in *Satva* may raise questions on authenticity of pharmaceutical processes adopted by respective pharmacies. For any Ayurvedic drug, *Rasa* (taste) is most important for the initiation of its action. Touch of all five samples is fine, which must be there for every *Satva* preparation (Table 1).

Almost all samples have simple starch gains. This indicates that *Satva* process helps to bring out starch grains of that particular drug. So the drug which has its active principles in starch should be used to get *Satva*. Slight variation in micro measurements is seen between all samples (Table 2). This could be due to difference in quality of raw material. India having vast diversity in climatic condition and hence change in quality and quantity of active principals are inevitable and hence slight variation in final product could be acceptable. Not only area but season also affects the potency of formulation and to minimize the changes and maximize the potency.

Table 1. Organoleptic characters of various *Guduchi satva* samples

Organoleptic parameters	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Color	Dull white	Whitish-grey	Dull white	Whitish-grey	Off white
Odour	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic
Taste	Moderately Bitter	Bitter	Tasteless	Bitter	Slightly bitter
Touch	Fine	Fine	Fine	Fine	Fine

Table 2. Microscopic characters of various *Guduchi satva* samples

Characters	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Starch grains	Simple, rounded to oval in shape, rarely with hilum, more angular grains.	Simple, rounded to oval in shape with clumps, rarely with hilum, more angular grains.	Simple, rarely with hilum, More mass of angular grains	Simple, rarely with hilum, angular grains	Simple, plenty of rounded to oval grains, rarely with hilum, angular grains rare
Size in µm	20 x 60 to 40 x 80	30 x 60 to 40 x 60	20 x 30 to 30 x 50	20 x 50 to 40 x 50	20 x 50 to 30 x 60
Inference	Prepared afresh from matured and young stem collection	Prepared afresh from matured and young stem collection	May be adulterated with rice floor or Ipac	Prepared some time ago from matured stem collection	Prepared afresh from matured and young stem collection

Figure 1. Macro-microscopic feature of *Guduchi satva* sample 1

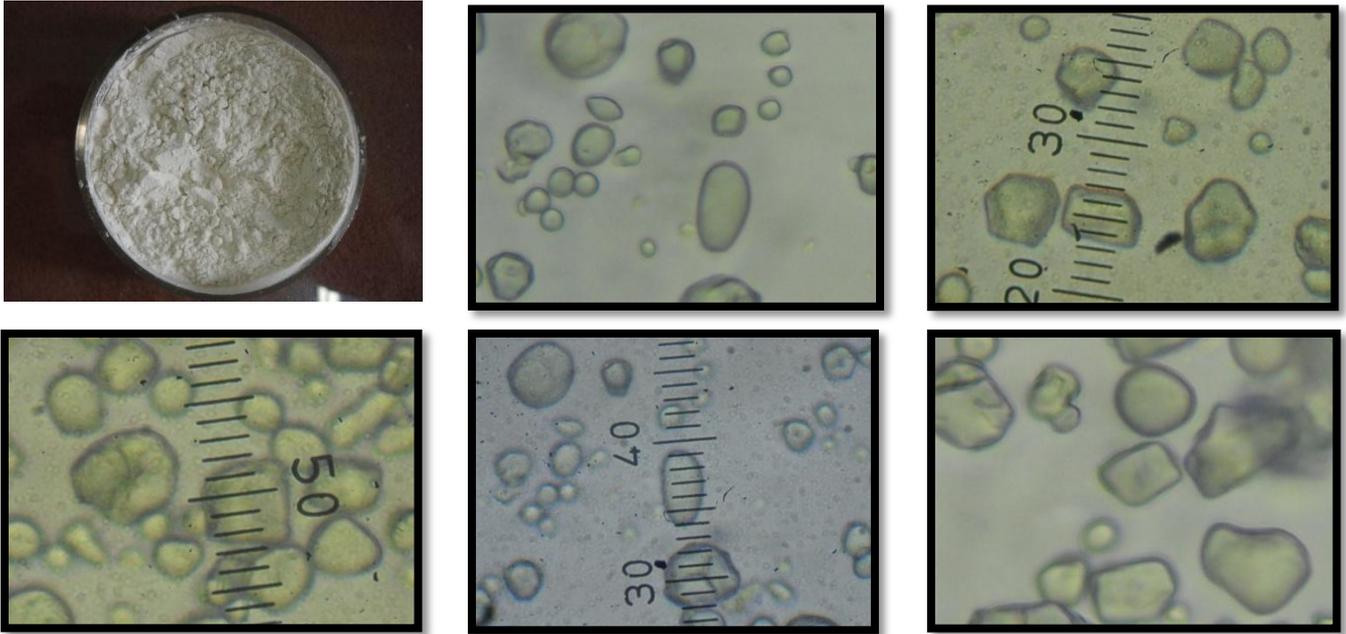


Figure 2. Macro-microscopic feature of *Guduchi satva* sample 2

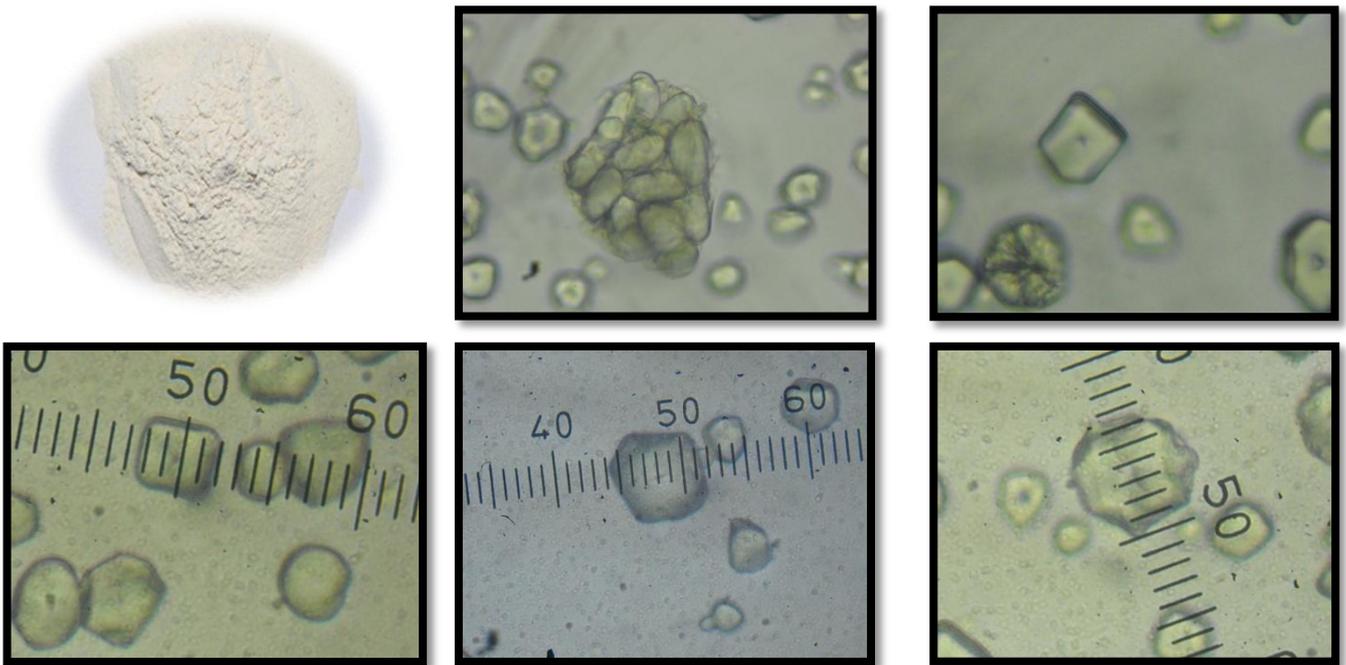
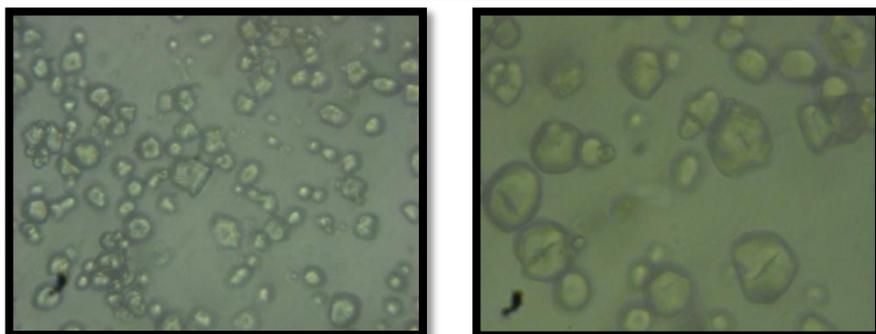


Figure 3. Macro-microscopic feature of *Guduchi satva* sample 3



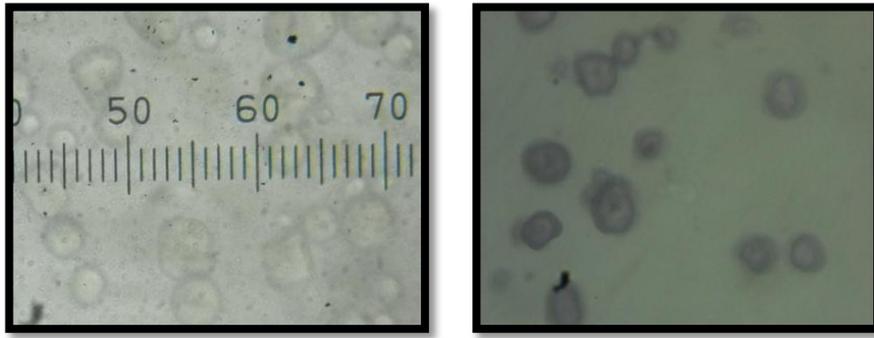


Figure 4. Macro-microscopic feature of *Guduchi satva* sample 4

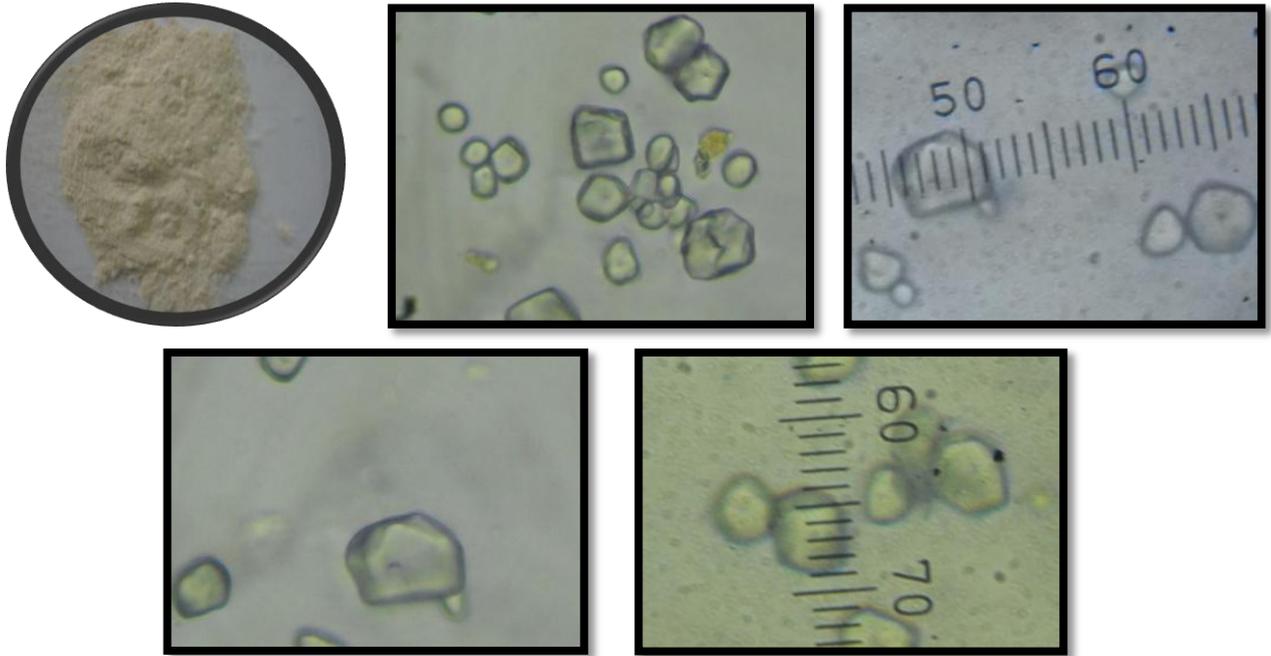
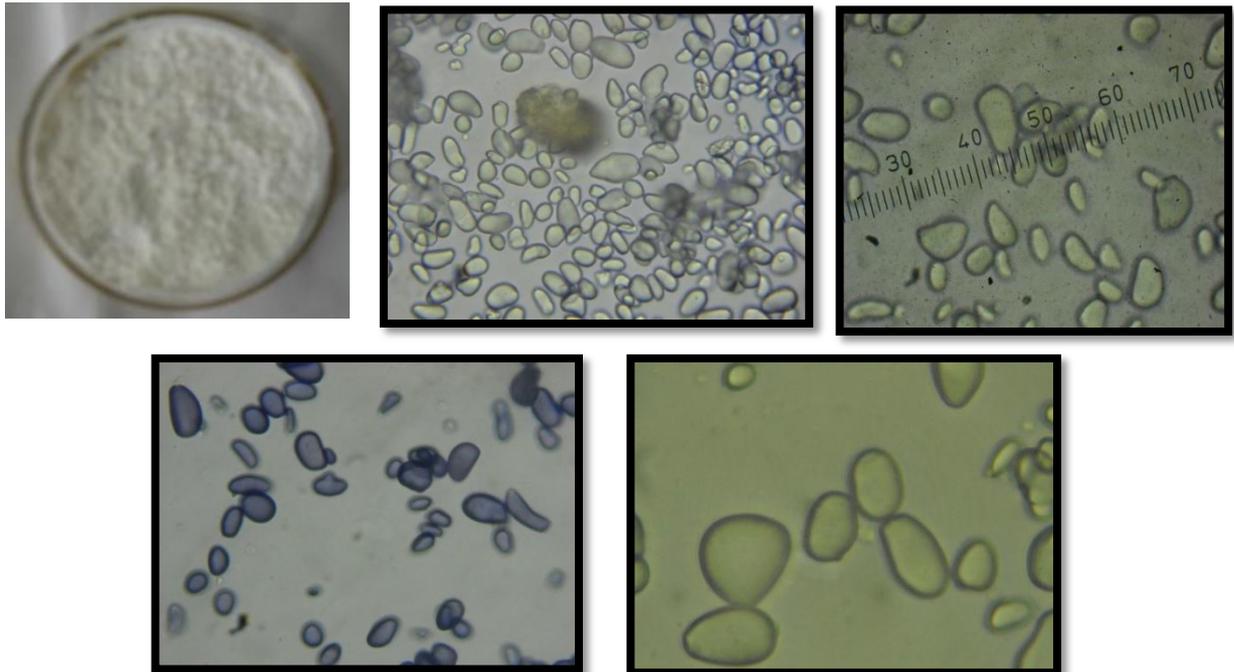


Figure 5. Macro-microscopic feature of *Guduchi satva* sample 5



CONCLUSION

The work has shown variations in *Guduchi satva* of randomly selected pharmacy samples and one lab sample. Reason behind this may be due to collection of raw material from different seasonal and climatic conditions, differences in adapted method of preparation etc. This research confirms that even though *Guduchi satva* is widely used in practice, authentic and approved SMP is lacking among manufacturers, hence posing a challenge to establish an acceptable processing method. This work shows that pharmaceutical companies may not be following same reference for drug preparation or fails to maintain one or more basic rules of Ayurveda pharmaceutics. Solution for this could be made by making consensus by all pharmaceutical companies for the use of identical classical reference in formulation preparations. Monographs in AFI and API could be the answer for this.

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