

Pharmaceutico analytical study of *Guduchyadi Avaleha* - Modified form of *Guduchyadi Ghrita*

Research Article

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Abstract

Stuttering (*Gadgada*) word itself indicates the disease in which fluency of speech is impaired. It denotes the un-cleared speech (*Avyakta Vak* or *Shabdha*). In Vangsen Samhita, the group of 8 drugs with honey is cited for the treatment of stuttering entitled as *Guduchyadi Ghrita*. Palatability of *Guduchyadi Ghrita* is the major concern in the treatment of children to administer as most of children unlike it, so by keeping this in mind *Avaleha* formulation is prepared which is easily administrable. *Guduchyadi Avaleha* is a herbo-mineral confection which is prepared by using sugar as a base. This herbal compound is formulated by experienced Acharya of Ayurved and is used in practice for stuttering. Though it's a potent formulation; but no standardized reports are available for the manufacturing process of the *Guduchyadi Avaleha* or its preliminary physico-chemical profiles. Therefore, manufacturing standardize process of preparation and preliminary physico-chemical profiles of *Guduchyadi leha* was planned. Methods- The prepared lickable formulation was lay open for the analysis of pharmacognostical and pharmaceutical properties like as pH value, Microscopic analysis, loss on drying the sample, reading of ash value, etc. Results – After analysis of Pharmacognostical organoleptic study, loss on drying value, pH, Ash value, Water soluble extract, the result was shown. Conclusion –All the characteristic of formulation sample was observed and the result can be taken as standard value for *Guduchyadi Avaleha*.

Key Words: *Guduchyadi Leha*, *Gadgada*, Pharmaceutical analysis, Stuttering, *Ayurvedic formulation*, *Avaleha*, Modified formulation.

Introduction

Speech is the unique characteristic feature of the human being. Speech is capability of human being to express his opinions, philosophies, and or other facts by means of pronouncing sound into meaningful words and sentences. Fluent speech is essential for psychological development of the child and for proper convey of thoughts. It enables a person to convey knowledge to a roomful of other people (1). The Stuttering (*Gadgada*) word itself indicates the disease in which fluency of speech is not present. It denotes the un-cleared speech (*Avyakta Vak* or *Shabdha*). This condition can be best correlated in contemporary science as stuttering / stammering.

In playschool children, incidences of speech diseases are affecting up to 10% and nearly 25% school going children are affected, many of them was delayed

speech development (2). In Vangsen Samhita, the group of 8 drugs with honey is cited for treatment of stuttering termed as *Guduchyadi Ghrita* (3) Palatability of *Guduchyadi Ghrita* is the major concern in the treatment of children to administer as most of children unlike it, so by keeping this in mind lick able formulation is prepared which is easily administrable. Ingredients of formulation and its quantity is mentioned in table number 1. In day to day pediatric practice combination of among these 8 drugs, most of the drugs are being used in the management of stuttering in various combinations. But there is no any research work documentation is available about the standardization, use and efficacy of the *Guduchyadi Leha* as a whole in the management of Stuttering in children. In this present study, *Guduchyadi Leha* herbal preparation, subjected to Pharmacognostical and Pharmaceutical analysis. Authentication of all ingredients of *Guduchyadi Leha* along with its preliminary organoleptic features and results of microscopy were verified.

Aim and Objectives

This study was aimed for standard manufacturing procedure of *Guduchyadi Leha* and to develop its analytical profile.

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Materials and Methods

Collection, Identification and Authentication of raw drugs (4)

The raw material used in the manufacturing of *Guduchyadi Leha* formulation were collected from the Dattatray Ayurved Rasashala, Salod (H) and all the drugs were identified and authenticated by the taxonomist, Department of Dravyaguna, Mahatma Gandhi Ayurved College, Hospital and Research Centre, Salod (H). Ingredients of *Guduchyadi leha* are enlisted in table no. 1.

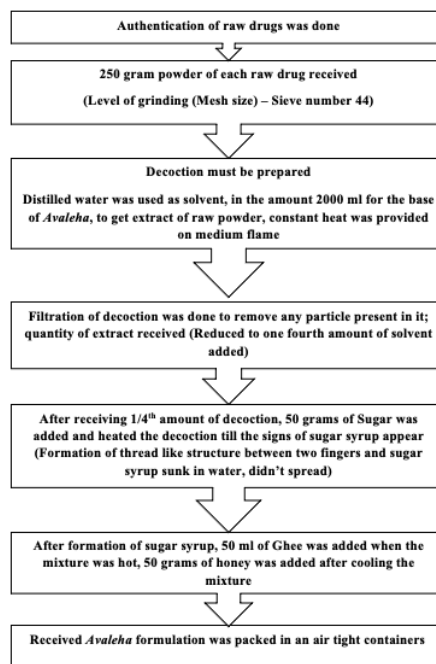
Table no. 1: Contents of *Guduchyadi Leha*

Sr	Drug	Botanical name /	Part used	Ratio
1	<i>Guduchi</i>	<i>Tinospora</i>	Stem	250 g
2	<i>Apamarga</i>	<i>Achyranthus aspera</i>	Leaf	250 g
3	<i>Vidanga</i>	<i>Embelia ribes</i> Burm	Fruit	250 g
4	<i>Shankhapu</i>	<i>Convolvulus</i>	<i>Panchang</i>	250 g
5	<i>Vacha</i>	<i>Acorus calamus</i>	Roots	250 g
6	<i>Shatavari</i>	<i>Asparagus</i>	<i>Kanda</i>	250 g
7	<i>Haritaki</i>	<i>Terminalia chebula</i>	Fruit	250 g
8	<i>Shunthi</i>	<i>Zingiber officinale</i>	Rhizome	250 g
9	<i>Sita/</i>	Sugar	-	250 g
10	<i>Ghrita</i>	Clarified butter	-	50 ml
11	<i>Madhu</i>	Honey	-	50 ml



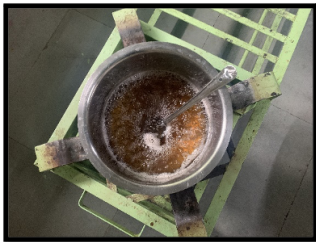

For *Guduchyadi Leha*, no standardized specific method of preparation is mentioned. This drug was prepared in Dattatray Ayurved Rasashala, Salod (H) as per general guidelines described in classics and as per Ayurvedic Pharmacopoeia of India (API) for *Avaleha*

formulation, depicted in images given below. Under the guidance of experts, Organoleptic features of the formulation and Physico-chemical analysis of final product *Guduchyadi Leha* has been done in Analytical laboratory of Mahatma Gandhi Ayurved College, Hospital and Research Centre, Salod (H), Wardha.

General method of preparation of *Avaleha Kalpana* is followed for the preparation of *Guduchyadi leha* (5)



Images of Drug Formulation

Image 1 (Grinding of authentufied raw drug)	Image 2 (Preparation of decoction)	Image 3 (Preparation of sugar syrup)	Image 4 – Formed <i>Guduchyadi Avaleha</i>
			

Analytical study

Analytical study of *Guduchyadi Leha* was planned and performed to set basic standards values for *Guduchyadi Avaleha* because there is no available data on standards of guidelines in pharmacopeia. Firstly the sample of *Guduchyadi Leha*, was tasted for organoleptic standards and detail characters are mentioned in table no.2

Table No. 2: Average Result of Organoleptic Characters of *Guduchyadi Leha*

Sr. No.	Character	Pharmacopoeia standard	Standards of committee	Observed	Inference
1	Colour	Not available	Brownish	Brownish	Acceptable
2	Odour	Not available	Characteristic	Characteristic	Acceptable
3	Taste	Not available	Sweet	Sweet	Acceptable
4	Touch	Not available	Soft	Soft	Acceptable

Microscopic study

On dissolving *Guduchyadi Leha* with water, microscopy of the sample was done without stain also after staining with Phloroglucinol + HCL. Under Carl-Zeiss trinocular microscope, microphotographs of *Guduchyadi Leha* were taken for examination of gram negative bacteria's (Enterobacteriaceae), E-coli, Salmonella, Staphylococcus aureus, Pseudomonas, Total fungus count. Total findings found in analysis is depicted in table no.3. Analysis of given sample was planned as per Ayurvedic pharmacopeia of India standards in quality control analytical laboratory of MGACH&RC, Salod (H), Wardha.

Table No. 3- Result of Microscopic Study of *Guduchyadi Leha*

Sr. No.	Parameters	Observations	Inference
1	Total viable count	Absent	Acceptable
2	Enterobacteriaceae	Absent	Acceptable
3	E-coli	Absent	Acceptable
4	Salmonella	Absent	Acceptable
5	Staphylococcus aureus	Absent	Acceptable
6	Pseudomonas	Absent	Acceptable
7	Total fungus count	Absent	Acceptable

Physico-chemical analysis

By using various standard physico-chemical parameters, *Guduchyadi Leha* was analyzed. (Table No. 4)

1. Loss on drying at 105°C (6)
2. Total ash value (7)
3. Acid insoluble ash (8)
4. Water soluble extractive (9)
5. Alcohol soluble extractive
6. pH
7. Brix value

Table No. 4: Physicochemical Analysis of *Guduchyadi Leha*

Sr. No.	Parameters	Observations	Interference
1	Value of loss on drying at 105 degree Celsius	5.83%	Acceptable
2	Total Ash value	4.23%	Acceptable
3	Acid insoluble ash	0.5%	Acceptable
4	Water soluble extractive	43.82%	Acceptable
5	pH value	6.2	Acceptable
6	Brix degree	65 degree	Acceptable

Result and Discussion

There are different formulations available in market for stuttering but the result of *Guduchyadi Ghrita* found significant in children suffering from stuttering, but *Ghee* formulation was difficult to administer in children. For this reason the *Guduchyadi Ghrita* formulation was modified to *Guduchyadi leha*, to make the formulation more palatable and acceptable

in children. Also this formulation can be preserved up to 2 years if kept in airtight container (10) by increasing its shelf life.

Guduchyadi leha was prepared by the general method of preparation of *Avaleha Kalpana* (Procedure to prepare lick able formulations) according to Sharangdhar Samhita as there was no specific method of preparation available in literatures, the whole process of formation of *Guduchyadi leha* was conducted in Dattatraya Rasashala under all aseptic precautions. After the preparation of product it was packed and sealed in air tight containers.

The standardization of *Guduchyadi leha* was performed in quality control laboratory and analytical standards were fixed by quality control department. Many of drugs were brownish in colour so the *leha* was turned brownish in colour, soft texture with characteristic smell and sweet taste.

Value of loss on drying formulation at 105°, it indicates there is presence of moisture and the value achieved at result was 5.83% which was acceptable. The total ash value of sample was 4.23% with acid insoluble ash was 0.5% and water soluble extractive was 43.82%. pH value of sample is found to be acidic with value of 6.2.

There was zero total viable count of Gram negative bacteria's (Enterobacteriaceae), E-coli, Salmonella, Staphylococcus aureus, Pseudomonas and Total fungus count.

Conclusion

Obtained result of *Guduchyadi Leha* in Physicochemical parameters was found to be within the parameters as per mentioned limits by Ayurvedic Pharmacopeia of India. Analytical findings which are found to be in present analytical study can be considered as standard reference for *Guduchyadi leha*. In the nutshell, it is ideal to perform standardization and analytical study of every formulations before consumption by humans at FDI and GMP certified pharmacy and laboratory by experts as per Ayurvedic pharmacopeia of India guidelines.

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Conflicts of interest

There are no conflicts of interest.

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