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Time Saving And Economical Approach In The Preparation Of Certain Avaleha W.S.R To Ikshuradi Lehyam

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Abstract:

Avalehya is a secondary formulation in Ayurvedic pharmaceutics, characterized by its semi-solid consistency. It consists of sweetening agents, fine powder of prakshepaka dravyas, and ghrita or madhu. The preparation involves a series of steps, including the mixing of powdered medicinal substances and sweetening agents into a homogenous mixture, followed by the addition of ghrita or madhu. This process is time-consuming and intricate, particularly in large-scale production.

So, an effort is made to find an economical and time-saving procedure in the preparation of Avalehyas. In the present research study, Ikshuradi lehyam is taken from Sahasra Yoga, where two batches of Ikshuradi lehyam were prepared in
A.L.N. Rao Memorial Ayurvedic Medical College and Pharmacy, Koppa. Both products were analyzed physicochemically in the Quality Control lab attached to ALARMAMC, Koppa.

Based on analytical reports, the innovative method adopted here in preparation saves time (3 hours to complete lehya) and is economical. Loss on drying at 105^{o}C of Ikshuradi lehyam 1 (10.39%) and Ikshuradi lehyam 2 (4.73%), reports in favour of increasing the shelf life of Ikshuradi lehyam 2.

Key words: Ikshuradi lehyam, Avaleha

Introduction:

The word *Avaleha* has been derived from the root *lihaswadane*, in which *lih* means substances that are licked, and *aswadane* means that which has good taste.[1]. According to Acharya Sharangadhara, the semisolid mass obtained by continuous heating of kwathadi dravyas is called Rasa kriya/Avaleha[2]. This is prepared by solidifying any liquid preparations along with sweetening agents, then Ghrita is added to the preparation just

before the 'Paka Siddha Lakshana stage, when avaleha paka lakshana is attained. The vessel is removed from the fire, and a fine powder of prakshepaka dravya is added little by little, stirred well to form a homogeneous mixture. After complete cooling, madhu is added.[3].

This classical process for making Avalehya is known for producing effective and therapeutically beneficial formulations; it is time-consuming and labour-intensive, particularly when scaled for industrial production. As a result, there has been interest in developing more efficient methods to produce these formulations without compromising their medicinal quality. This method incorporates the gradual addition of boiled ghrita during preparation to aid in the mixing process and to achieve a consistent, homogeneous mixture. Unlike traditional methods, the sweetening agents

and Prakshepaka dravyas in this approach are not dissolved in liquid but are instead finely powdered and blended into the mixture without the need for additional water or other liquid media. This modification in the preparation process aims to simplify production, reduce time, and ensure a more streamlined process.

This present research aims to evaluate the pharmaceutical and analytical differences between the traditional preparation of Ikshuradi lehyam and the modified method using Sahasra yoga principles. By comparing these two methods, the study seeks to assess whether the modernized approach can maintain the therapeutic benefits of the traditional formulation while offering a more practical and time-efficient alternative for industrial production. The outcome of this research could have significant implications for large-scale manufacturing of Ayurvedic formulations, providing a balance between maintaining classical efficacy and meeting modern production demands.

Aims: To evaluate the pharmaceutico-analytical difference between the traditional preparation of Ikshuradi lehyam and the modified method.

Objectives:

- To prepare Ikshuradi lehyam as per classical reference.
- Preparation of modified Ikshuradi lehyam.
- To analyse Ikshuradi Lehyam 1 and Ikshuradi Lehyam 2 by various physicochemical parameters.

Hypothesis:

- **Null Hypothesis:** There is no significant difference between Ikshuradi lehyam 1 and Iksharadi lehyam 2.
- **Alternate Hypothesis:** There is a significant difference between Ikshuradi lehyam 1 and Ikshuradi lehyam 2.

Materials and Method:

- Trial drugs Ikshuradi lehya 1 and Ikshuradi lehya 2 were prepared as per reference of Sahasrayoga[4]
- Standard operating procedure mentioned for avalehya kalpana as per Sharanghdhara samhitha[5]

Practical no. 1:

Name of the practical: Ikshuradi churna preparation

Ingredients: Ikshara, Gokshura, Kapikachu, Musali, Shatavari, Masha, Tila

Method of Data Collection: Ikshuradi churna was prepared as per Sharangadhara Samhita[6]

Table no 1 ingredient of churna

Sl no.	Ingredients	Botanical name	Proportion
1	Ikshura	Saccharum officinarum	500gm
2	Gokshura	Tribulus terrestris	500gm
3	Kapikacchu	Mucuna pruriens	500gm
4	Musali	Curculigo orchioides	500gm
5	Shatavari	Asparagus racemosus	500gm
6	Masha	Vigna mungo	500gm
7	Tila	Sesamum indicum	500gm

Steps:

1. The above-mentioned raw drugs were purchased from Anamaya Herbals' raw drug supplier, Udupi.
2. Then the useful parts were cleaned, rinsed in water, and dried under natural sunlight.
3. After drying, individual drugs were converted into coarse powder form using a disintegrator.
4. Coarse powder of each drug was again taken in a pulverizer and made into fine powder.
5. Produced particles were passed through Sieve number 44/85.
6. Finely dried Tila Seeds were powdered with the help of Khalvayantra into powdered form.
7. Later, fine powder of all drugs was mixed together into a homogenous mixture.
8. This homogeneous mixture was divided into two equal parts, one part used for the preparation of Ikshuradi lehyam 1 and the second part for the preparation of Ikshuradi lehyam 2.

Storage: The Ikshuradi Churna prepared was measured and stored in an airtight container.

Result: Total quantity of ingredient: 3.5kg Total quantity of churna obtained: 3 kg 200 gm **Amount of loss:**

300 gm

Practical no. 2

Name of the practical: Iksharadi lehyam 1

Ingredients: Ikshara churna, Gokshura churna, Tila churna, Kapikacha churna, Musali churna, Shatavari churna, Masha churna, Ghrita, Khandasharkara, Jala, Madhu

Method of Data Collection: Ikshuradi Lehyam 1 was prepared as per the guidelines of Sahasra Yoga.

Table no. 2 Ingredients of Ikshuradi lehyam 1

Sl no.	Ingredients	Proportion
1	Ikshura Churna	250gm
2	Gokshura Churna	250gm
3	Kapikachu Churna	250gm
4	Musali Churna	250gm
5	Shatavari Churna	250gm
6	Masha Churna	250gm
7	Tila Churna	250gm
8	Ghrita	250gm
9	Khandasharkara	7kg
10	Jala	7 litre
11	Madhu	500gm

Steps:

1. The mentioned quantity of Khanda sharkara and water was taken in a stainless-steel vessel and subjected to moderate heat with proper stirring.
2. Heating was continued till we obtained 1-2 thread consistency of sugar syrup.
3. At this stage, ghrita was added and mixed, followed by the addition of a homogeneous mixture of churna and mixed well.
4. Heating was continued till we got all Avalehya Siddha Lakshanas.
5. Then the vessel was taken from the fireplace and allowed to self-cool.
6. Later, honey was added and mixed well into a lehya consistency.

Storage: Prepared Iksharadi lehyam 1 was measured and stored in an airtight container. **Result:** Total quantity of the ingredient: 9kg 500 gm Total quantity of lehya obtained: 9kg Loss: 500 gm

Quantity of sample sent for analysis: 200 gm

Practical no. 3

Name of the Practical: Iksharadi lehyam 2

Ingredients: Ikshara churna, Gokshura churna, Tila churna, Kapikachu churna, Musali churna, Shatavari churna, Masha churna, Ghrita, Khanda Sharkara, Madhu

Method of Data Collection:

Table no. 3 Ingredients of Ikshuradi lehyam 2

Sl no.	Ingredients	Proportion
1	Ikshura Churna	250gm
2	Gokshura Churna	250gm
3	Kapikachu Churna	250gm
4	Musali Churna	250gm
5	Shatavari Churna	250gm
6	Masha Churna	250gm
7	Tila Churna	250gm
8	Ghrita	2.5kg
9	Khandasharkara	7kg
10	Madhu	500gm

Steps:

1. Khanda Sharkara was made into fine powder with the help of pulverizer and sieve.
2. The Mentioned quantity of ghrita was taken in stainless steel vessel and subjected to moderate fire.
3. Once the ghrita liquefies, it was taken out from the fire place.
4. Immediately Sharkara and churna were added and mixed thoroughly, until Avalehya consistency was achieved.
5. Later required quantity of Madhu was taken and mixed.

Storage: Prepared Ikshuradi lehyam 2 was measured and stored in air tight container.

Result: Total quantity of ingredient 11kg

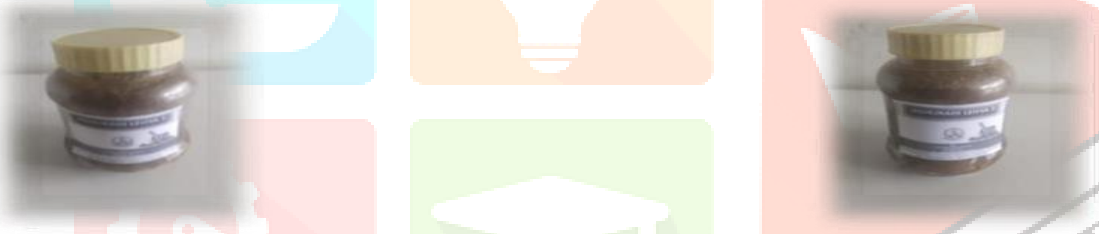
Total quantity of lehya obtained 10kg 800gm

Loss: 200gm

Quantity of Sample send to analysis: 200gm

Figure no.1 - Images of Drug Formulation

Figure no.2 Final product



Result:

Pharmacognostical Study

Iksharadi lehyam is herbal drug, sample was identified and authenticated by Pharmacognosy departments ALNRMAMC, Koppa. The identification was carried out on the basis of organoleptic features and morphological features as per Standard references.

Pharmaceutical Evaluation:

Physico-chemical Parameters: Ikshuradi lehyam was analyzed by using qualitative and quantitative parameters at Quality control Laboratory, ALNRMANC, Koppa. The parameters mentioned in Ayurvedic Pharmacopeia of India and CCRAS guidelines i.e., pH, Loss on drying, and soluble extractive, water soluble extractive, total sugar, reducing sugar were taken [7].

Table no. 4 Organoleptic characters

Test	Ikshuradi lehyam 1	Ikshuradi lehyam 2
Color	Brown	Green
Odour	Characteristic (pleasant)	Characteristic (pleasant)
Taste	Sweet, astringent	Sweet, Sour, Acrid
Texture	Semi solid, Sticky paste	Solid

Table no. 5 Physicochemical parameters

Tests	Ikshuradi lehyam 1	Ikshuradi lehyam 2
Loss on Drying at 105°C	10.39%	4.73%
Total ash	13.33%	7.24%
Acid insoluble ash	0.83%	0.63%
Water insoluble ash	2.33%	1.60%
Water soluble	97.676%	98.40%
Alcohol soluble extractives	45.93%	20.26%
Water soluble extractives	55.12%	45.93%
pH(10% aqueous solution)	4.48 ± 0.10	4.28 ±0.10

Table no.6 Preliminary Phytochemical Test (Qualitative Tests)

Tests	Ikshuradi lehyam 1	Ikshuradi lehyam 2
Carbohydrates	Present	Present
Protein	Present	Present
Alkaloids	Present	Present
Cardiac glycoside	Present	Present
Flavonoids	Present	Present
Tannins	Present	Present
Antraquinone glycoside	Present	Present
Triterpenoides	Present	Present

Table no.7 Fluorescent tests

Ikshuradi lehyam 1

	Under Visible Light	**Under Long UV**
Sample +Water	Brownish cream	Fluorescent green
Sample+MeOH	Whitish cream	Fluorescent green
Sample+ 10% NaOH	Yellow	Fluorescent yellow
Sample+10%HCl	Light cream	Fluorescent green
Sample+10% HNO_3	Yellowish cream	Fluorescent yellow
Sample+10% H_2SO_4	Yellowish cream	Fluorescent green
Sample+ 10% NH_3	Creamish yellow	Fluorescent yellow

Ikshuradi lehyam 2

	Under Visible Light	**Under Long UV**
Sample +Water	Brownish cream	Fluorescent yellow
Sample+MeOH	Whitish cream	Fluorescent cream
Sample+ 10% NaOH	Yellow	Fluorescent yellow
Sample+10%HCl	Light cream	Fluorescent green
Sample+10% HNO_3	Light cream	Fluorescent cream
Sample+10% H_2SO_4	Light cream	Fluorescent green
Sample+ 10% NH_3	Orangish yellow	Fluorescent yellow

Table no.8 Quantitative tests

Tests	**Ikshuradi lehyam 1**	**Ikshuradi lehyam 2**
Total sugar	18.15%	18.77%
Reducing sugar	9.51%	9.67%
Non-reducing sugar	8.64%	9.10%
Total fat	14.52%	15.21%

Table no. 9 Thin Layer Chromatography

Solvent System: Chloroform: Ethyl acetate: Formic Acid- 50: 40:10

Methanol extracts were used for spotting. No Spots were observed under visible lights.

Rf values	Ikshuradi lehyam 1	Ikshuradi lehyam 2
	Under Long UV	Under Long UV
0.06	----------	Fluorescent green
0.14	Fluorescent green	Fluorescent green
0.18	Fluorescent green	Fluorescent green
0.27	----------	Fluorescent green
0.57	Fluorescent green	Fluorescent green
0.67	Fluorescent green	Fluorescent green
0.80	Fluorescent green	Fluorescent green
0.86	Fluorescent green	Fluorescent green

Table no.10 Microbial contamination

	Ikshuradi lehyam 1	Ikshuradi lehyam 2
Total aerobic count	1.5 x 10^2 cfu/g	4.5 x 10^2 cfu/g
Total fungal count	2.1 x 10 cfu/g	1.5 x 10 cfu/g

Discussion on pharmaceutical study:

The preparation of Avalehya, a key secondary formulation in Ayurvedic pharmaceutics, reflects the richness and complexity of traditional medicine. In the preparation of Iksharadi lehyam 1, the method adopted was classical Avalehya Kalpa. The sweetening agent was dissolved in the liquid media and strained to remove foreign particles. This solution was boiled over moderate fire till optimal Paka Lakshana were observed and is taken out of the fireplace. Later, fine powder of drugs and ghrita were added in small quantities. Stirred continuously to form a homogenous mixture. It took almost 2 days for the completion of Avalehya. This process is time-consuming and intricate, particularly in large-scale production.

In this case an alternative preparation method of Ikshuradi lehyam 2 was prepared here. Instead of using water or other liquid media, the process involves the gradual addition of boiled ghrita to the powdered ingredients. This method not only ensures thorough mixing but also eliminates the need for water-based media, which can introduce moisture-related stability issues in the final product. By using ghrita as the medium, the product's shelf life is extended, and its potency is preserved.

Discussion on Analytical Study:

Based on the organoleptic characters of both preparations, the texture of Iksharadi lehyam 1 was semi-solid and sticky in nature, whereas Iksharadi lehyam 2 was semi-solid, and there was no sticky nature, which makes Lehya is easy for consumption.

Loss on drying of both preparations gives ideas about lesser moisture content in the case of Ikshuradi lehyam 2, as water was not added in the entire procedure.

Conclusion:

As the classical method of preparation of Avaleha may address some of the practical challenges, like being time- consuming and intricate, particularly in large-scale production can adopt innovative methods of preparation that reduce the time of preparation and are economical. Analytical Study reports in favor of increasing the shelf life of Ikshuradi lehyam 2.

Such techniques can be adopted in practical lehya formulation, which has ghrita and madhu as main ingredients.

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