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Pharmaceutical and Analytical Approach to "Laghu Sankha Dravaka"

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ABSTRACT

Pharmaceutical preparation of Laghu sankha dravaka and its evaluation with possible analytical parameters. In this study the Laghu sankha dravaka is prepared by following the reference mentioned in Rasatantrasara evam siddha prayogasangraha and its analytical tests are performed as per the guidelines mentioned in Protocol for testing Ayurvedic, siddha and unani medicines. The Organoleptic characters observed are Amla- lavana- kshara rasa, Kshara-amla-gandha, Transparent straw yellow colour, slightly sticky by touch, pH - 2, Ash value - 22.55%w/w, Specific gravity - 1.022 w/w and Refractive index - 1.40. Most of the organoleptic and some of the analytical values satisfy the therapeutic indications of Laghu sankha dravaka as mentioned in the classic.

Keywords: Laghusankha dravaka, Amla, lavana, kshara, Gastro intestinal disorders

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INTRODUCTION

Ayurveda is an ancient Indian System of medicine deals with abundant formulations. Different dosage forms are available from time to time according to need. More patient compliance, increased shelf life and minimal dosage are the main concern behind this. *Dravaka kalpana* is also one among the drug dosage form mentioned in a few *Ayurvedic classics* mainly indicated in Gastro intestinal disorders which fulfils the above-mentioned criteria.[1] In spite of its convenient form of administration (Liquid) and dosage (5 - 10 drops) it is not much popular in clinical practice. The foremost reason for this may be its non-availability in the market.

The first reference is found as *Agni drava* or *Amla drava* in Rudra *Yamala Tantra*.[2] *Dravaka* is liquid preparations obtained from *Lavanas and Ksharas*. In a few *Dravaka Kalpas* no liquids are added but the product will be in liquid form and is produced due the reaction of chemicals within the raw materials.On the basis of application of heat the preparation is of two types. *Anagni method* and *Agni method* and on the basis of concentration *Dravakas* can be categorized into two types' viz. *Sandra* (Concentrated) and *Sarala* (Dilute). These are stored in glass stoppered bottles and do not deteriorate by lapse of time. It is indicated for both internal and external uses.[3] Here we have chosen *Laghu sankha Dravaka* and its reference is from *Rasatantrasar aevam siddhaprayoga sangraha*. *Laghu sankha Dravaka* comes under *Agni* method of *Dravaka* preparation.[4]

MATERIAL AND METHODS

Procurement of Ingredients: *Navasadara, Surya Kshara, Sphatika, Yavakshara,* all the ingredients are collected from GMP certified Parul *Ayurved* pharmacy, Limda, vadodara.

Objectives:

Pharmaceutical preparation of Laghu sankha dravaka

Evaluation of it with possible analytical parameters

Method of Preparation: All the ingredients should be taken in equal quantity mixed well with quantity sufficient *Nimbu rasa (Citrus limon.L. Osbeck.*). Two chapati (Indian flat bread) should be made with wheat flour. On one chapati this Mixture should be placed and it is covered with another chapati(Indian flat bread)and the ends are to be closed. Then cook on a Tava (Pan) till it turns red. Then observe for the

presence of product. If liquid sound appears within it then made a hole & the liquid is collected and preserve in an air tight glass container. This is named as *Laghu sankha dravaka*.[4]

ANALYTICAL PARAMETERS

Determination of pH Values

The pH value conventionally represents the acidity or alkalinity of an aqueous solution. In the pharmacopoeia, standards and limits on pH have been provided for these pharmacopoeial substances in which pH as a measure of the hydrogen activity is important from the stand point of stability or physiological suitability. The measurement of pH is generally done with a suitable potentiometric meter known as the pH meter fitted with two electrodes, one constructed of glass and sensitive to hydrogenation activity and the other a calomel reference electrode. The second method is with Litmus paper. [5]

Determination of Total Ash

Incinerate about 2 to 3 g accurately weighed, of the ground drug in a tared platinum or silica dish at a temperature not exceeding 450° until free from carbon, cool and weigh. If a carbon free ash cannot be obtained in this way, exhaust the charred mass with hot water, collect the residue on an ash less filter paper, incinerate the residue and filter paper, add the filtrate, evaporate to dryness, and ignite at a temperature not exceeding 450°. Calculate the percentage of ash with reference to the air-dried drug. [6] **Refractive Index**

The refractive index (n) of a substance with reference to air is the ratio of the sine of the angle of incidence to the sine of the angle of refraction of a beam of light passing from air into the substance. It varies with the wavelength of the light used in its measurement. Unless otherwise prescribed, the refractive index is measured at $25^{\circ}(\pm 0.5)$ with reference to the wavelength of the D line of sodium (Ψ =589.3 nm). The temperature should be carefully adjusted and maintained since the refractive index varies significantly with temperature. [7]

Specific gravity

The specific gravity of a liquid is the weight of a given volume of the liquid at 25° (unless otherwise specified) compared with the weight of an equal volume of water at the same temperature, all weighing being taken in air. Method Proceed as described under Wt. per ml. Obtain the specific gravity of the liquid by dividing the weight of the liquid contained in the Pycnometer by the weight of water contained, both determined at 25^o unless otherwise directed in the individual monograph.[8]

The ingredients are, Table No: 1 Ingredients and Quantity						
SINo	Ingredients in Sanskrit	Chemical formula	English Name	Quantity		
1	Navasadara	NH ₄ Cl	Sal ammoniac	8gm		
2	Surya Kshara	KNO3	Potassium nitrate	8gm		
3	Sphatika	K2SO4,Al2(SO4)3.24H2O	Alum	8gm		
4	Yavakshara	Yavakshara KCl,K ₂ SO ₄ ,KHCO ₃ Kshar		8gm		
5	Nimbu swarasa		Citrus limon. L. Osbeck.	QS.		

RESULTS AND DISCUSSION

All the ingredients are taken in *ashodhita* (impure form) form and each one is weighed about 8gm and powdered separately. Then all the ingredients are triturated well with 20 ml of Nimbu rasa (Citrus limon). 250gm of wheat flour is taken and prepared fine smooth dough of it with 75ml of water. Two chapati (Indian flat bread) are made with the dough and each one is weighed about 155gm. On one chapati the mixture is placed & it is covered with another chapati and the ends are closed. This fresh mass is cooked on a Mud pan in *mandagni* (mild flame) about 20 min and it turns red, and appeared as well cooked. Turned off the stove and taken out the chapati from the Pan. While shaking it we felt presence of some liquid content within it and then made a hole at one of its lateral end with a knife and deliberately collected the product. Thenitis preserved in an air tight glass container after filtration.

Precautions:

- 1. All the ingredients should be in *Ashodhita* form.
- 2. The quantity of Nimbu rasa (lemon juice) will be very minimal to prepare a smooth mixture of the ingredients.
- 3. Chapatis should be thick enough to withstand heat.
- 4. The heating process is continued in *mandagni* till the end.
- 5. The resultant product must be filtered and preserved in an air tight glass container.

Sl No	Organoleptic characters		Observations		
1	Rasa(Taste)		Amla-Lavana- Kshara(sour- salt-alkaline		
2	Gandha (Smell)		Amla-Kshara(Sour-Alkaline)		
3	Roopa (Structure)		Transparent straw yellow colour		
4	Sparsha (Texture)		Slightly sticky		
Table No: III Analytical Values					
SI No Analytical			narameter V	alue	

Table No: II Organoleptic characters

1 4 5 1 6 1 1 1 1 1 4 1 4 1 4 1 4 1 4 1 4 1 4				
Sl No	Analytical parameter	Value		
1	рН	2		
2	Ash value	22.55 % w/w		
3	Refractive index value	1.40		
4	Specific gravity	1.022 w/w		

20ml of transparent *Laghu sankha dravaka* was collected and stored after filtration. The dose is mentioned as 5 to 10 drops of medicine mixed with 24 ml to 48 ml of water two times in a day. The indications are *Gulma* (abdominal lump), *Shula* (pain), *Yakritdosha* (disorders of the Liver), *Pleeha*(Splenic disorders), and *Ashmari*(Calculus). [9] Though the ingredients used in preparation are both acidic and alkaline in nature the final product showed acidic pH.

Table No: IV pH value of ingredients

F				
Sl No	Name of Ingredient	Value of pH		
1	Navasadara	5.6		
2	Surya Kshara	6.2		
3	Sphatika	3		
4	Yavakshara	9-11		
5	Nimbuswarasa	2-3		

PROBABLE MODE OF ACTION

Table No: V Properties of ingredients

Ingredients	Rasa	Guna	Veerya	Vipaka	Karma	Therapeutic uses
Navasadara[10]	Kashaya,	Laghu,	Ushna		Tridoshahara,	Pleehaprashamana,
	Lavana,	Sukshma,			Jataragnideepana,	Gulmaadhmanahara,
	Amla	snighdha			pachana	vrischikavishaghna
Surya Kshara[11]	Katu,	Teekshna,	Ushna	Katu	VahniDeepana	Panduhara, Ashmarighna
	Lavana	Atyushna,				
		Deepaka				
Sphatika[12]	Kashaya,	Guru, Snigdha	Ushna	Katu	Vishadoshahanti	Vranaghna, keshya, Kanthya,
	Katu, Amla					Vranashodhana,
						Raktastambhana
Yavakshara[13]	Katu,	Laghu,	katu	Katu	Kaphavatahara	Gulma,
	Kshara	Snigdha				Pleeha, Shula etc
Nimbuswarasa[14]	Amla	Laghu,	Ushna	Amla	Vatakaphashamaka	Vahnimandyahara,
		Tikshna				Trushnahara, Shulahara

All the ingredients are having the *Agni deepana and Aama Pacana* action so these may acts on *Pachaka pitta, Samanavata, kledakakapha* and *strotas*. Therefore *Lakhu sankha dravaka* may have the therapeutic properties as mentioned in the Reference.

RATIONALITY BEHIND THE NAME

As compared to Sankha dravaka number of ingredients is less in Laghu sankha dravaka, [15] and the indications are almost same as that.

CONCLUSION

Dravaka kalpana is also one among liquid drug dosage form mentioned in *Ayurvedic* system of medicine and mainly indicated in Gastro intestinal disorders. In spite of its convenient form of administration (Liquid) and with minimal dosage also it is not much popular in clinical practice. The foremost reason for this may be its non availability in the market. The method of preparation followed here looks unique and different from other dravaka preparations. The ingredients used in the preparation are mostly kshara (Alkali), lavana (Salt) and also nimbu swarasa (Acid) which are Ushna (hot) and teekshna (Sharp) in their properties which meets the indications mentioned in *Rasatantrasar aevam siddhayoga sangraha*.



Img: 1 Required materials



Img: IV Mixture of ingredients applied on chappathi



Img: V Sealed chappathis





Img: VI Cooking of chappathis



Img: VII Collection of Laghu sankha Dravak



Img: X Filtration of Laghu sankha Dravak





Img: IX Chappathis after collection of product

Img: XI Preserved Product

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