

## A PRELIMINARY STANDARD FOR 'SURADARULEPA CHURNA'- AN AYURVEDIC PREPARATION

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**ABSTRACT:** SURADARU LEPA CHURNA'-A Compound drug formulation in Ayurvedic system of medicine was analysed. The proximate chemical analysis, the microscopic method of identifying their ingredients, fluorescence study and thin layer chromatographic studies of the drug have been reported in this paper.

### Introduction

Lepa is one of the category of prepared medicines in Ayurvedic system of medicine. They are pastes or plasters intended with the ointments of western pharmacopoeias, 'Kalimbu, Mezhuagu and Vannai' of Siddha Pharmacopoeia', and 'Merham and jimad of Unani system of medicine'.

Suradaru lepa churna is one of the lepa preparations in powder form in the Ayurvedic system of medicine, used externally as poultice on inflammatory swellings after mixing it with buttermilk, lemon juice or hot water wither to resolve or suppress the swellings. It is said to possess counter-irritant and anti-inflammatory activities.

It is prepared as described in the Hospital pharmacopoeia of Integrated medicine, Madras-Ayurveda-Part I page 110' and Vaidyayogaratravali of 'Impcops' Ltd page 207 by powdering, sifting and mixing the clean and well dried crude drugs in the ratio specified.

Sl. No	Common Name	Ayurvedic Name	Scientific Name	Part used	Ratio
1	Himalayan cedar	Devadaru	Cedrus deodara Loud	Wood	I Part
2	Dry Ginger	sunti	Zingiber officinale Rosc	Rhizome	I Part
3	Sal Ammoniac	Navakshara	Ammonium chloride		I Part

So, paper aims at evolving a simple analytical standard involving proximate chemical studies, identification of their ingredients by microscopical method, fluorescence and thin layer chromatographic studies.

### Materials and Methods

The identification of the ingredients of the drug has been carried out as suggested by “Trease and Evans 1966”: ‘Johanson D.A 1939’ and by their characteristic anatomical features, the identify of crude drugs have been confirmed.

The proximate chemical analysis like loss on drying, ash content, water insoluble ash, alkalinity of the water soluble ash, and insoluble ash water soluble matter, alcohol soluble matter, successive extraction of the drug in various polar and non-polar solvents, pH of 2% aqueous solution, volatile matter, resin content, total invert sugar, starch content and ammonium chloride present were determined for the compound drug formulation suradaru lepa churna as suggested by standard pharmacopoeal methods, (A.O.A.C. XIIIth edition 1980); Analysis by A.I Vogel. and the chemical Analysis of Food by David Pearson) and the results are furnished in Table II.

Volhard method of estimation of chloride by volumetric method was not suitable to estimate the amount of chloride present inter alia ammonium chloride in this case because the solution of the compound drug formulation was highly coloured and marked end point. Hence the gravimetric method of estimation of chloride by means of silver nitrate was opted for and the estimation was done, observing all the details and precautions as stipulated in the text book of inorganic Analysis ‘ by A.I. Vogel.

Prior to the estimation of total invert sugar and starch tannin and glycosides should be eliminated

Thin layer chromatographic studies of the compound drug and the individual drugs were carried out after extracting them with various polar and non-polar solvents with different developing systems according to the nature of the active principles as suggested by E. Stahl 1969. And J.B Harbourne 1973. The ethereal extract of Suradaru lepa churna and the individual ingredients gave prominent chromatograms than the extractives of the other solvents when subjected to T.L.C on silicogel. G. layer using Benzenex Chloroform (50=50) as solvent system. After development the plate was dried and sprayed with vanillin-sulphuric acid reagent, kept in an air oven maintained at a temperature of 120 C for five minutes. The number colour and R<sub>f</sub> value of the spots were recorded and the results are furnished in table III.

### **Observation and results**

Powder analysis: Randomly collected samples of the compound drug and the individual drugs, have been mounted separately in different slides with glycerol, iodine water, chloral hydrate Sudan III, phloroglucinol and Hcl., examined under the microscope. The characteristic anatomical features of the individual drugs, noted in the compound preparation suradaru lepa churna have been carefully examined and the identity has been confirmed as follows.

**A.Sunti:** Simple, oval to round starch granules 11-42x9-22 micron size, tracheids not stained by phloroglucinol and Hcl., long fibres upto 14 micron diameter confirmed the presence Sunti. (dry ginger).

**B. Devadaru:** Trachides with bordered pits, uniseriate rays, ray parenchyma of sap wood with brown coloured resinous matters which has been also stained red with sudan III indicated the inclusion of Devadaru (Himalayan cedar Wood).

**C. Navakshara:** White crystals of glossy appearance 25-700 micron dia, slowly dissolving in the mixture of glycerin and water confirmed the addition of Navakshara, (Sal ammoniac).

**Table – I Fluorescence Studies**

S.No	Treatment		Day light	U.V. Longware
1	Suradaru lepa	Churna as such	Light brown	Buff colour
2	-do-	+Water	Brown	Pale blue
3	-do-	+0.1N NaoH	Brown	Sky blue
4	-do-	+50% H <sub>2</sub> SO <sub>4</sub>	Brown	Pale pink
5	-do-	+Ethyle alcohol	Brown	Blue
6	-do-	+Acetone	Brown	Blue
7	-do-	+Benzene	Brown	Blue
8	-do-	+Chloroform	Brown	Pinkish blue

**Table – II Proximate chemical analysis**

S.No	Analytical findings	Values in % W/W
1	Loss on drying at 110°C	5.339
2	Ash content	26.048
3	Alkalinity of ash	0.09608ml of 0.1NHel/gm
4	Water insoluble ash	1.596
5	Acid insoluble ash	0.593
6	Water soluble extractive	37.642
7	Alcohol soluble extractive	27.832
8	Successive extractives:-	
	a. Petroleum ether	16.205
	b. Benzene	2.828
	c. Chloroform	2.898
	d. Alcohol	22.784
	e. Water	24.397
9	Total invert sugar	14.364
10	Starch	12.931
11	Resin content	13.774
12	Ammonium chloride	30.128
13	Volatile matter	1% v/w
14	pH of 2% aqueous solution	6.325 (mere number)

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**T.L.C. of Ethereal extract**

1	Stationary phase	: Silicagel, G.
2	Mobile phase	: Benzene + Chloroform
3	Ratio	: 50+50
4	Run	:12 Cms
5	Spray reagent	:Vanillin-sulphuric acid
6	Detection	:spray reagent used, dried at 120 <sup>o</sup> c for five minutes and observed in day light.

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Suradaru lepa churna		Sunti		Davadaru		
No of sports	4 Spots	2 Spots		3 Spots		
	Colour	hRf	Colour	hRf	Colour	hRf
	Blue	5.25			Blue	5.25
Colour and hRf Value	Pink	11.05	Pink	11.12		
	Pink	25.15			Pink	25.21
	Pink	99.50	Pink	99.48	Pink	99.52

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**Discussion**

The presence of ingredients in the compound formulation Suradaru lepa churna is confirmed by the microscopical study. The Gravimetric method of estimating chloride and thereby Ammonium chloride is highly suitable than the volumetric method (volhard method). Almost similar hRf values and the identical colours of the chromatogram of the inclusion of the ingredients as stated in the recipe. Hence the microscopical analysis, chemical studies, fluorescence and T.L.C studied may be taken as one of the quality control measures to assess the quality of the drug 'Suradarulepa churna'.

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