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CHINCHA KSHARA: A DUAL-FORM COMPARATIVE STUDY W.S.R TO SUSHRUTA SAMHITA & SHARANGADHARA SAMHITA

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ABSTRACT

The study investigates and compares the physicochemical and crystalline characteristics of Chincha Kshara—an alkaline preparation derived from tamarind bark—in both paste (kalka) and powder (churna) forms. Following classical Ayurvedic methods described by Acharya Sushruta and Sharangadhara, the Kshara was prepared and analyzed to determine its composition, stability, and potential therapeutic value. Physicochemical testing indicated significant differences in moisture content, with the paste exhibiting higher loss on drying than the powder. Both forms maintained a highly alkaline pH of 12. Powder X-ray diffraction (PXRD) revealed that key crystalline constituents included potassium-based compounds such as potassium chloride, potassium hydrogen carbonate, and potassium ferrate, which may contribute to the formulation's traditional uses in treating digestive disorders and supporting electrolyte balance. The findings emphasize the relevance of classical Ayurvedic preparations in modern analytical contexts and support their continued exploration for therapeutic applications.

KEYWORDS: Chincha Kshara, Apamarga Kshara, Chemical cauterisation, physico chemical Analysis.

INTRODUCTION

In Ayurvedic medicine, Kshara refers to an alkaline substance derived from plant ash, known for its potent therapeutic applications, particularly in surgical and para-surgical treatments. Chincha Kshara, obtained from the tamarind plant (Tamarindus indica), has been less explored compared to other ksharas like Apamarga Kshara. This study aims to compare the physicochemical and crystalline properties of Chincha Kshara in two forms-paste(kalka) and powder(churna) based on Sushruta and Sharangadhara References to evaluate their potential efficacy, stability, and composition.

MATERIALS AND METHODS

Chicnha Kshara was prepared by different methods mentioned in Ayurvedic classics, with variation in proportion of water, duration of soaking ash and filtration pattern etc. The plant sample was procured from local village of Tirupati in Ansdhra pradesh and authenticated pharmacognistically before pharmaceutical study.[1] The Phala Twak was taken, dried properly in sun light and burnt and ash was prepared, after preparing the ash it was processed as per two different methods mentioned in Sushruta Samhita and as per Sharangadhara Samhita.

Preparation of Chincha Kshara as per Acharya Sushruta

Chincha phala twak was collected and completely dried and made in to small pieces

↓

Using few twigs of dried tila plant, above heap is burnt

↓

When fire has burn out, the greyish ash is collected

↓

To these 6 parts of gomutra had added and stirred well, left un disturbed for a night

↓

The supernatant portion is collected and filtered for 21 times with the help of cloth

↓

Clear filterate is taken in iron vessel and put over a mild fire

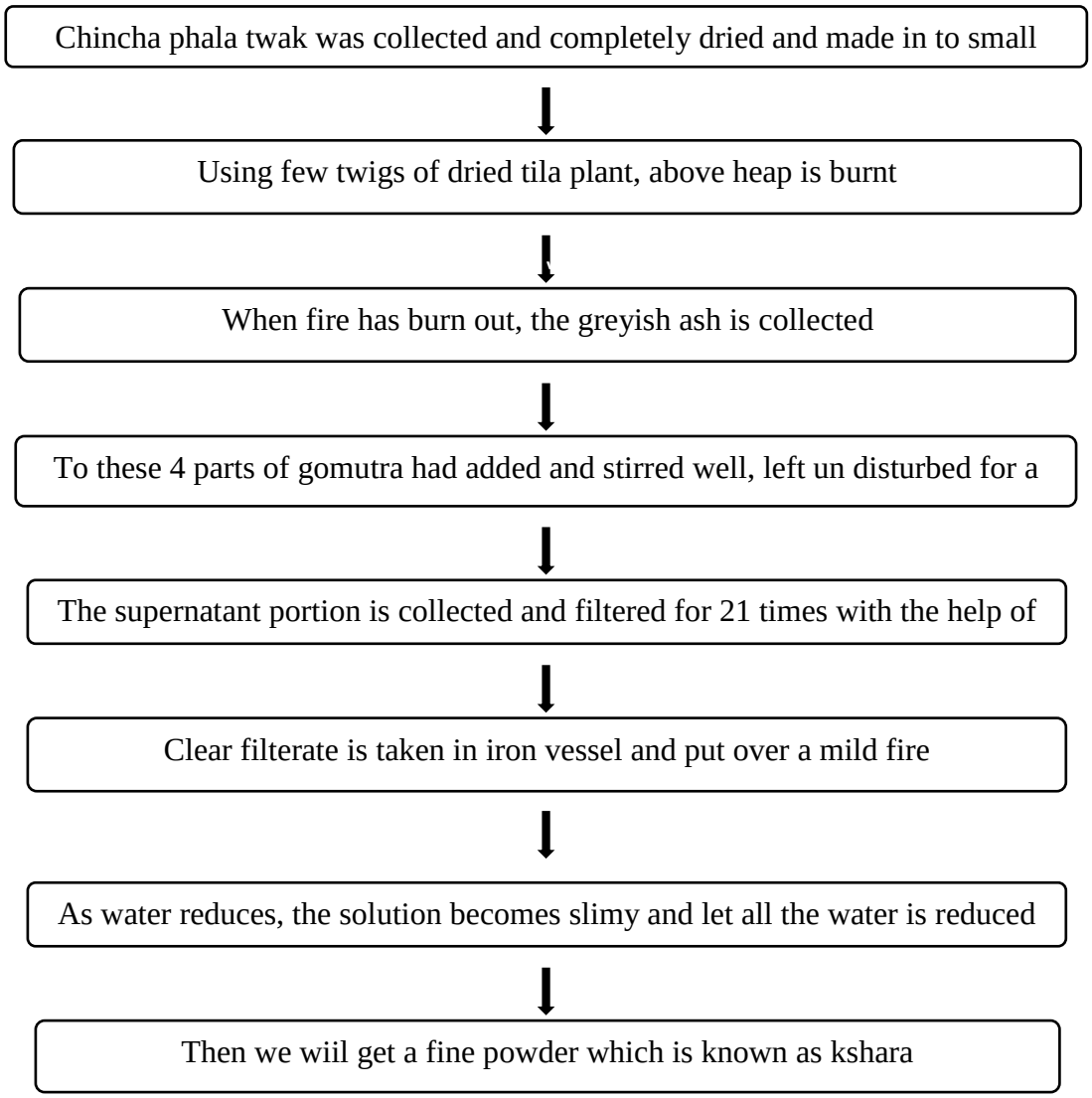
↓

As water reduces, the solution becomes reddish and slimy

↓

Collect the kshara when it is in semi solid form

Preparation of kshara as per Acharaya Sharangaradhara



Physico-chemical Parameters

All the physicochemical parameters were carried out as per the standard test procedures (Lohar DR. Protocol for testing of Ayurvedic, Siddha and Unani medicines. Ghaziabad: Government of India, Department of AYUSH, Ministry of Health & Family Welfare, Pharmacopoeial Laboratory for Indian Medicines; 2008; p.21, 40-47).

Powder XRD Analysis

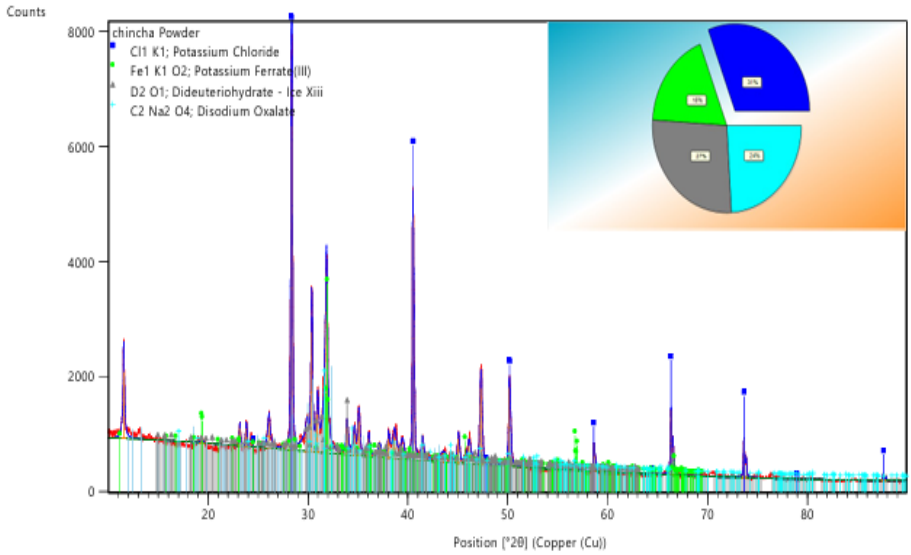
Powder diffraction data were collected by AerisPANalytical diffractometer (Netherlands) with Ni-filtered copper radiation in Bragg-Brentano geometry. Fine powder of the sample taken in a thin layer on a silicon zero background holder. The sample was recorded for the angle 2θ in the range of 10-90 degrees at a scanning rate of 4 degrees/sec with CuKα (λ 1.5418 A°).

PXRD Measurement Conditions

Dataset Name	chincha Paste
File name	E:\Sep 2024\chinchaPaste.xrdml
Sample Identification	chincha Paste
Measurement Start Date/Time	01-05-2024 13:11:21
Operator	Instrument
Raw Data Origin	XRD measurement (*.XRDML)
Scan Axis	Gonio
Start Position [°2θ]	10.0119
End Position [°2θ]	89.9819
Step Size [°2θ]	0.0220
Scan Step Time [s]	78.7950
Scan Type	Continuous
PSD Mode	Scanning
PSD Length [°2θ]	5.54
Offset [°2θ]	0.0000
Divergence Slit Type	Fixed
Divergence Slit Size [°]	0.4584
Specimen Length [mm]	10.00
Measurement Temperature [°C]	25.00
Anode Material	Cu
K-Alpha1 [Å]	1.54060
K-Alpha2 [Å]	1.54443
K-Beta [Å]	1.39225
K-A2 / K-A1 Ratio	0.50000
Generator Settings	8 mA, 40 kV
Diffractometer Type	348709
Diffractometer Number	0
Goniometer Radius [mm]	145.00
Dist. Focus-Diverg. Slit [mm]	95.00
Incident Beam Monochromator	No
Spinning	Yes

Physico-chemical Parameters

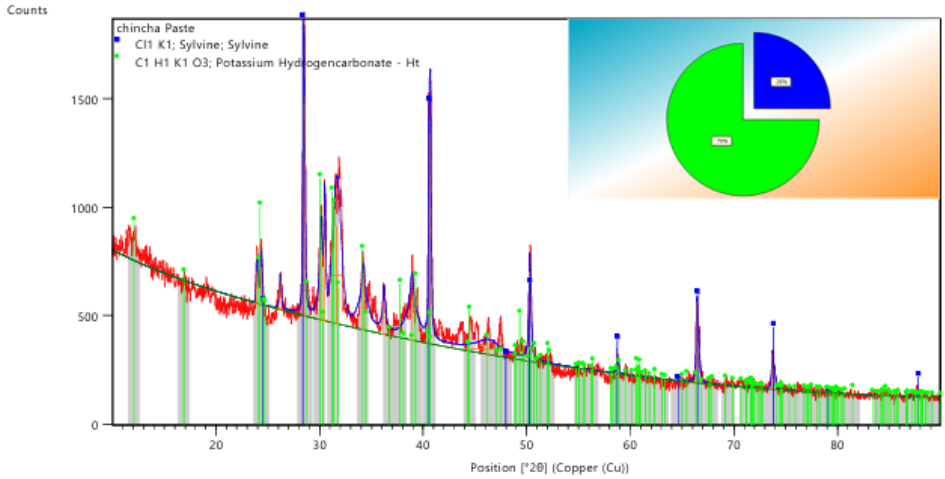
S.No	Parameter	Sample 1	Sample2
1	LOD (105°C)	17.17	1.58
2	pH (10% solution)	12	12



Peak List:

Pos. [°2θ]	Height [cts]	FWHM Left [°2θ]	d-spacing [Å]	Rel. Int. [%]
11.5259	1153.88	0.1656	7.67128	20.53
19.3340	55.80	0.1217	4.58726	0.99
23.1510	301.10	0.1261	3.83884	5.36
23.7961	302.57	0.1744	3.73622	5.38
26.0645	434.72	0.2593	3.41597	7.73
28.3394	5620.70	0.1639	3.14672	100.00
29.8754	355.20	0.4825	2.98833	6.32
30.3507	2071.53	0.1468	2.94261	36.86
30.9381	651.06	0.2178	2.88807	11.58
31.7019	1184.51	0.2440	2.82020	21.07
31.8389	2041.19	0.1688	2.80838	36.32
33.8893	464.15	0.1812	2.64301	8.26
34.6301	359.63	0.2142	2.58815	6.40
35.0647	582.67	0.2213	2.55706	10.37
36.0513	305.52	0.2138	2.48931	5.44
37.1490	153.37	0.3176	2.41824	2.73
38.0428	325.19	0.1281	2.36345	5.79
38.6460	361.62	0.4363	2.32794	6.43
39.4338	208.06	0.3234	2.28323	3.70

Main Graphics, Analyze View



Peak List

Pos. [°2θ]	Height [cts]	FWHM Left [°2θ]	d-spacing [Å]	Rel. Int. [%]
23.9653	140.72	0.2484	3.71022	14.49
24.3457	170.32	0.2166	3.65310	17.54
26.1868	132.97	0.1179	3.40029	13.70
28.4632	970.85	0.2031	3.13331	100.00
30.1162	316.50	0.3411	2.96499	32.60
30.4802	374.06	0.1798	2.93040	38.53
31.6487	450.42	0.9467	2.82483	46.39
34.1977	203.01	0.5113	2.61987	20.91
36.1867	150.21	0.2749	2.48031	15.47
38.8811	205.31	0.6113	2.31440	21.15
40.6200	969.61	0.2129	2.21925	99.87
46.2474	46.33	3.3124	1.96146	4.77
50.2703	411.69	0.2026	1.81351	42.40
58.7148	109.57	0.0626	1.57122	11.29
66.4424	369.70	0.1702	1.40598	38.08
73.7376	163.90	0.1963	1.28386	16.88

Pattern List:

Visible	Ref.Code	Score	Compound Name	Displ.[°2θ]	Scale Fac.	Chem. Formula
*	98-024-0505	56	Sylvine	0.000	0.891	KCl
*	98-008-1619	32	Potassium Hydrogen carbonate	0.000	0.348	$KHCO_3$

Main Graphics, Analyze View

40.5030	4199.19	0.1238	2.22538	74.71
41.4347	308.27	0.1860	2.17747	5.48
43.5056	124.21	0.9975	2.07850	2.21
45.0370	409.08	0.1834	2.01132	7.28
46.1020	302.71	0.3338	1.96731	5.39
47.2878	1312.01	0.2193	1.92070	23.34
50.1548	1367.29	0.1645	1.81742	24.33
51.5961	83.89	0.4044	1.76999	1.49
56.7277	116.86	0.2149	1.62145	2.08
58.6138	470.49	0.1660	1.57368	8.37
59.4054	110.96	0.1807	1.55459	1.97
66.3510	1116.87	0.1229	1.40770	19.87
73.6615	670.83	0.1452	1.28500	11.93
87.6112	123.41	0.1568	1.11280	2.20

Pattern List:

Visible	Ref.Code	Score	Compound Name	Displ.[°2θ]	Scale Fac.	Chem. Formula
*	98-015-4214	65	Potassium Chloride	0.000	1.003	KCl
*	98-015-7785	34	Potassium Ferrate(III)	0.000	0.359	$KFeO_2$
*	98-015-5542	30	Dideuteriohydrate - Ice Xiii	0.000	0.106	D_2O
*	98-017-1458	21	Disodium Oxalate	0.000	0.165	$Na_2C_2O_4$

Two samples of Chincha Kshara-paste(kalka) and powder (Chuna)-were obtained from the Department of Shalya Tantra, S.V. Ayurvedic Medical College, Tirupati, and submitted to the Siddha Central Research Institute for analysis.

Physicochemical parameters such as Loss on Drying (LOD) and pH were assessed using AYUSH guidelines (Lohar, 2008).

PXRD analysis was conducted with an AerisPANalytical XRD diffractometer using CuK radiation, scanning from 10 to 90 2 at 25C.

RESULTS

Physicochemical Parameters

Loss on Drying (%): Paste = 17.17, Powder = 1.58-

pH (10% solution): Both Paste and Powder =12.0

PXRD Analysis

Paste: Sylvine (KCl), Potassium Hydrogen Carbonate (KHCO)

DISCUSSION

This analysis showcases how traditional formulations can be systematically evaluated to validate their composition, quality, and potential mechanisms of action. The alkaline pH and presence of potassium-based salts suggest Chinchaksharas potential in treating conditions related to hyperacidity, indigestion, and electrolyte imbalance. Furthermore, the presence of potassium ferrate highlights the possibility of additional therapeutic benefits through oxidative pathways.

The physicochemical parameters were evaluated based on standardized protocols outlined in the AYUSH Pharmacopoeial Laboratorys guidelines (Lohar DR, 2008). Two key findings emerged:

1. **Loss on Drying (LOD at 105C)**

Paste: 17.17%-

Powder: 1.58%-

Interpretation: A higher LOD in the paste suggests more moisture content, which is typical of semisolid formulations. The powder, being dry and more stable, had minimal moisture.

2. **pH (10% solution)** Both forms recorded a highly alkaline pH of 12, which may correlate with its traditional use in neutralizing acidic conditions in the body.
3. **PXRD Analysis**

PXRD analysis was conducted using a PANalytical diffractometer with Cu K radiation. This technique helps identify crystalline phases and compounds present in the samples. The results offer significant insights into the chemical nature and potential bioactivity of the ingredients.

Paste Sample Composition Highlights

Major crystalline constituents included

Sylvine (KCl) known for its role in electrolyte balance and osmotic regulation.

Potassium Hydrogen Carbonate (KHCO3) a mild alkalizing agent, which aligns with the high pH.

Powder Sample Composition Highlights

Dominant compounds included

Potassium Chloride (KCl) consistent with the paste.

Potassium Ferrate (KFeO2) a compound with oxidizing properties, potentially contributing to antimicrobial effects Disodium Oxalate (Na2C2O4) which may play a role in buffering pH.-

Dideuteriohydrate (D2O) possibly a remnant of sample preparation with deuterated solvents. The presence of these salts and oxalates implies the formulations efficacy in modulating pH, supporting electrolyte levels, and possibly possessing mild antimicrobial effects all relevant to traditional claims.

CONCLUSION

The Chinchakshara Paste and Powder study reflects the growing convergence between traditional knowledge and contemporary science. With rigorous analytical backing, such formulations are better positioned for integration into broader therapeutic frameworks, ensuring safety, efficacy, and consistency.

Recommendations for Future Work

Evaluate biological activity through in vitro and in vivo studies.- Conduct toxicity profiling for long-term safety assurance.- Undertake clinical trials to correlate traditional uses with scientific evidence.

Collection of chincha Phala Twak

Burning of chincha Phala Twak

Hearing of chincha Phala Twak till it turns to white ash

White ash of chincha phaal twak

Rested for Overnight

Adding Gomutra to ash of chincha Phala Twak

Collection of Superintedent Portion

Filtered for 21 times

Boiling

Boiling

REFERERNCES

1. Balbhadra Shristi, Ganti Y Basavraj. Pharmaceutical study of different samples of Apamargakshara. Int J Res Ayurvedapharma, 2018; 9(1): 17-22.
2. Neeraj Tandon (Editor). Quality standard of Indian medicinal plant, Vol 9. New Dellhi: Medicinal Plants Unit, ICMR, 2012; 26-8.
3. Honward, V Sudheer, Handbook of standardization of Ayurvedic Formulation, 1sted. Varanasi: Chaukahambha Orientalia, 2012; 60-3.
4. Eton FM. Significance of carbonate in irrigation waters. Soil science, 1950; 69: 123-33.
5. The Ayurvedic Pharmacopoeia of India. New Delhi: Department of AYUSH, Ministry of Health and Family Welfare, Government of India; Part II Vol. II; Year: 3rd edition., 50,51,226.
6. Mc Mullan D. Von Ardenne and the scanning electron microscope. Proc Roy Microscsoc, 1988; 23: 283-8.
7. Balbhadra Shristi, Ganti Y Basavaraj. Characterization of whole plant of Apamarga (Achyranthus aspera) vis-à-vis physico-chemical properties, HPTLC and powder microscopy. J of Ayurveda and Hol Med., 2017; 5(4): 1-8.
8. Neerja P, Ashutosh TJ. Efficacy of Silicone Gel for Treatment of Hypertropic Scars and Keloids. Cutan Aesthet Surg, 2009; 2(2): 104-6.
9. Kazembe TC, Gapu P, Duri ZJ. Metals and Metal Ions in Some Plants Used for Wound Healing in Zimbabwe. Bulletin of Environment, Pharmacology and Life Sciences, 2012; 1(5): 30–9.
10. Pathak Ramrakshak. Ayurveda Sarasamgraha. Allahabad: Shri Baidyanatha, Ayurveda Bhavan Ltd., 2002; 609.

11. Shastri K. Rasa Tarangini, Delhi: Motilal Banarasidas, 11th Edition., 1989; 337.
12. Shrivastavashailaja, Editor. Sarangadhara, Sarangadhara Samhita, Madhymakandha, chapter 11/102-104, Hindi commentary, Jiwanprada. Varanasi: Chaukhambha Orientalia Acadamy, 2013; 275.
13. Mishra GS. Ayurveda Prakasha, chapter 6/123-124. Varanasi: Chaukhambha Bharati Academy, 2014; 503.
14. Acharya YT. Dravyagunavijnana, Bombay: Satyabhamabai Panduranga, 2003; 97-8.
15. Shastri A, Editor. Sushrutasamhita, Ayurveda Tatva Sandipika Sutrasthana, chapter 11/13-15, 4th Edition, Varanasi: Chaukhamba Orientalia, 2003; 35-6.
16. Dixit SO, Angadi R, Narayana SK. Comparative Physico chemical Analysis of Apamarga Kshara Samples Prepared in Presence of Jala and Gomutra. J Ayu Med Sci., 2017; 2(3): 244-6.