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A PHARMACEUTICO-ANALYSIS OF SARASAWATA CHURNA BY HIGH PRESSURE LIQUID CHROMATOGRAPHY (HPTLC)

Vd. Sandeep Aggarwal[1], Dr. Balbir Singh[2]
[1]*Ph.D. Scholar, Department of Kayachikitsa, Shri Krishna AYUSH University, Kurukshetra, Haryana.*
[2]*Professor & Guide, Department of Kayachikitsa, Shri Krishna AYUSH University, Kurukshetra, Haryana.*

***Corresponding Author**-Vd. Sandeep Aggarwal, Ph.D. Scholar, Department of Kayachikitsa, Shri Krishna AYUSH University, Kurukshetra, Haryana.*

ABSTRACT

Ayurvedic formulations are recognized to be very effective and to have few adverse effects; yet, there is a gap in the global market for Ayurvedic formulations since there are no validation requirements for identification and quality control. Saraswata Churna is a traditional Ayurvedic concoction used to treat memory loss, psychosomatic illnesses, and other conditions. The goal of the project is to create and standardize Saraswata Churna in accordance with the GMP requirements of the World Health Organization (WHO), which are the first reports of their kind to be made public. The formulation was made at the Shri Krishna Govt. Ayurvedic College and Hospital, Kurukshetra, Haryana, and it was assessed using High Performance Thin Layer Chromatography, powder drug studies, physicochemical parameters (loss in drying, ash value, acid soluble extract, water soluble extract, pH value), and organoleptic characteristics. Powder drug analysis revealed specific identities for crude raw drug, which are useful as markers in the preparation and identification of formulation components. The results of different standardization parameters revealed satisfactory and sufficient data to evaluate the in-house formulation and can be utilized as reference standards in various quality control aspects of the formulation.

KEYWORDS- ***Saraswata Churna, Physico-chemical, Pharmaceutical Study, etc.***

INTRODUCTION

The ingredients of Saraswata Churna, an Ayurvedic polyherbal formulation, include parts of several species, including Brahmi (Bacopa monnieri) and Vacha (Acorus calamus), Maricha (Piper nigrum), Pippali (Piper longum), Shunthi (Zingiber officinale), Kushta (Saussurea lappa), Ashwagandha (Withania somnifera), and Saindhava lavana (rock salt), Ajamoda (Apium graveolens), Sweta jeeraka (Cuminum cyminum), Krishna jeeraka (Carum carvi), Shunthi (Zingiber officinale), Patha (Cissampelos pareira), Shankhapushpi (Convolvulus pluricaulis), and Kushta (Saussurea lappa). In the Bhaishajya Ratnavali literature, Saraswata Choorna is referenced in "Unmada Chikitsa." For the treatment of psychotic illnesses such as Unmada, the churna is useful. Regular Saraswata churna consumption enhances memory power, intelligence, dhriti (control over mind), Buddhi (higher mental processes), and Kavita Shakti (poetic genius) [1].

Despite being the most widely used formulation in Ayurvedic therapy, not much research has been done on standardizing Saraswata churna to date. Since most Ayurvedic remedies contain entire plants, either alone or in combination, the effectiveness of the formulations may change depending on the adulterants used. Therefore, it is critical to use physical and chemical techniques to determine the properties of the raw materials and completed Ayurvedic products. Due to the intricacy and potential side effects of using allopathic medications, most people on the planet these days are choosing to employ alternative medical systems. As to Bhaishajya Ratnavali's statement [2]

Although 10 herbs make up Saraswata Churna, not even one standard is stated to guarantee the product's identification, potency, purity, safety, and effectiveness. The formulation and quality control assessment of the significant Ayurvedic formulation are the subjects of this article. To verify the authenticity, potency, purity, safety, and efficacy of Saraswata Churna, the research aims to assess the organoleptic characteristics, powder drug analysis, physicochemical parameters, and phytochemical assessment in accordance with the Ayurvedic Pharmacopoeia of India and WHO norms. To the best of our knowledge, this is the first paper that reveals the formulation and assessment of this significant Ayurvedic preparation, according to a thorough review of the literature.

METHODOLOGY

The pharmacy at the Shri Krishna Govt. Ayurvedic College and Hospital, Kurukshetra, Haryana, carries Kushta (Saussurea lappa), Ashwagandha (Withania somnifera), Saindhava lavana (rock salt), Ajamoda (Apium graveolens), Sweta jeeraka

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(Cuminum cyminum), Krishna jeeraka (Carum carvi), Shunthi (Zingiber officinale), Maricha (Piper nigrum), Pippali (Piper longum), Patha (Cissampelos pareira), Shankhapushpi (Convolvulus pluricaulis), Vacha (Acorus calamus), and Brahmi (Bacopa monnieri) swarasa (juice).

The Pharmacognosy branch of the Institute performed a macroscopical identification of each constituent, and an organoleptic evaluation was conducted to identify sensory attributes such as color, flavor, texture, size, and fracture. Every component was gathered and thoroughly cleaned. They were each ground into a powder using a pulverize. Except for Vacha, each of the eleven components was weighed individually and combined in equal amounts. Eleven portions of powdered vacha were then added. Fresh Brahmi entire plants were used to harvest Brahmi swarasa. Three bhavanas were performed on the powder, which was stored in new Brahmi swarasa. The powder was shade-dried after bhavana. To create a uniform mix, it was then ground up one again and sent through sieve number 80 [3-5]. To keep it safe from light and moisture, it was stored in airtight containers. In the pharmacy of Shri Krishna Govt. Ayurvedic College and Hospital, Kurukshetra, Haryana, India, Saraswata choorna was made.

QUALITATIVE ANALYSIS AND STORAGE

For standardizing characteristics, such as foreign organic matter, water soluble extractive, methanol soluble extractive total ash, and acid insoluble ash, a quantitative study of the raw material was conducted. The authorized raw material was kept in a cold location after being packaged in sterile, airtight polybags with the appropriate labeling [6–8].

PHYSICO-CHEMICAL ANALYSIS

At the pharmaceutical chemistry laboratory of Shri Krishna Govt. Ayurvedic College and Hospital, Kurukshetra, Haryana, India, Saraswata Choorna was examined based on several factors, including loss on drying, ash value, water soluble extract, methanol soluble extract, pH value, volatile oil concentration, and particle consistency.

RESULT AND DISCUSSION OD SARASWATA CHURNA

ORGANOLEPTIC CHARACTERS

The finely ground Saraswata Churna powder has a fibrous texture, a nice smell, and a greenish brown color. It tastes salty and is like well-made Churna [9, 10].

QUALITATIVE ANALYSIS

The quality of the crude medication may be ascertained using the ash readings. Inorganic radicals found in ash include phosphate, carbonates, and silicates of calcium, magnesium, potassium, sodium, and other elements. Extractive values are helpful in assessing crude pharmaceuticals. It provides insight into the makeup of the chemical components included in the crude medication [11]. The formulation's total Ash value, according to analytical data, was 11.3%. The extractive value of water that dissolves in solution signifies the existence of inorganic chemicals, sugar, and acids. The Saraswata Churna's water soluble extractive value of 24% revealed that the formulation's water-soluble components were more numerous. The plant sample's alcohol-soluble extractive value reveals the existence of polar compounds such as flavonoids, phenols, alkaloids, steroids, glycosides, and secondary metabolites. In the Saraswata churna, the extractive value soluble in alcohol was 20.24%. The sample's pH was 6.7.

High performance thin layer chromatography (HPTLC)

Method of preparation of methanolic extract

3 grams of Saraswata Churna powder and 60 milliliters of 75% methanol were combined to create a solution, which was then stored for 24 hours with sporadic shaking in a clean, dry location. Next, the extract was collected and passed through Whatman No. 1 filter paper for filtration. A 30% w/w yield was obtained by heating 30 milliliters of the aforesaid solution in a thermostatic water bath until a dark brownish residue was produced.

HPTLC

Using a V sample applicator equipped with a 101 µl Hamilton syringe, methanolic extract of Saraswata Churna was spotted on a pre-coated silica gel GF 60343 Aluminium plate. The mobile phase included 7 ml of toluene, 3 ml of ethyl acetate, and 2 ml of acetic acid. Viewing the final HPTLC pattern was possible at 254 nm for short-wave UV light and 366 nm for long-wave UV light.

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TABLE 1: INGREDIENTS OF SARASWAT CHURNA

S.no.	Drug name	Latin name	Useful Part	Proportion
1.	*Kushtha*	*Saussurea lappa* C.B. Clarke	Root	1part
2.	*Ashwagandha*	*Withania somnifera* (L.) Dunal	Root	1part
3.	*Saindhava Lavana*	*Sodium chloride*	-	1part
4.	*Ajamoda*	*Apium graveolens*-semen	Fruit	1part
5.	*Shweta Jeeraka*	*Cuminum* cyminum Linn.	Fruit	1part
6.	*Krishna Jeeraka*	*Carum carvi* Linn.	Fruit	1part
7.	*Sunthi*	*Zingiber officinale* Roscoe	Rhizome	1part
8.	*Maricha*	*Piper nigrum* Linn.	Fruit	1part
9.	*Pippali*	*Piper longum* Linn.	Fruit	1part
10.	*Patha*	*Cissampelos pareira* Linn.	Root	1part
11.	*Shankhpushpi*	*Convolvulus pluricaulis* Forsk.	Whole plant	1part
12.	*Vacha*	*Acorus calamus* Linn.	Rhizome	11 parts
13.	*Brahmi*	*Bacopa monnieri* (Linn) pennell	Whole plant	Q.S. for *Bhavna*

Table 2: Quantitative Analysis

Sl. No.	Physico-Chemical Parameter	Result
1	Loss in drying	9.02 % w/w
2	Ash value	11.2 % w/w
3	Water soluble extract	24% w/w
4	Methanol soluble extract	18.93% w/w
5	pH value	6.7

Table 3: HPTLC

Spot	Rf Value at 254 nm	Rf Value at 366 nm
1	0.03	0.02
2	0.17	0.16
3	0.76	-

DISCUSSION

An essential Ayurvedic preparation for therapy was developed, assessed, and resembles some distinguishing characteristics. The formulation's acceptable quality was demonstrated by the organoleptic features, which included a pleasing aroma and adequate look. The existence of certain cellular features, which may be used as a reference identifying feature of the formulation, was amply demonstrated by the histological examination. After a number of physicochemical factors were assessed, it was discovered that the formulation contains mineral salt, which is the reason for the increased ash levels. The completed Saraswata churna product was tested for pertinent organoleptic evaluation, powder drug analysis, physicochemical parameters (loss on drying, total ash, water soluble extractive value, ethanol soluble extractive value), phytochemical evaluation, and HPTLC as part of the standardization procedure and WHO guidelines.

CONCLUSION

In order to prepare and identify the formulation, the findings of the powder drug analysis provided precise IDs for the crude raw drug. An important finding for evaluating quality control criteria for Polyherbal Ayurvedic formulations is the method of Saraswata Churna preparation and the analytical data presented.

CONFLICT OF INTEREST -NIL
SOURCE OF SUPPORT -NONE

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