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Research Article

VAISHVANARA CHURNA – STANDARDIZATION, EVALUATION AND COMPARATIVE OVERVIEW OF PHARMACOGNOSTIC AND PHARMACEUTICAL PROPERTIES

Bhogale Vijaya Prakash[1]*, Chandra Komal Phoolchandra[2], Chumbhale Heena Tushar[2], Dhane Aniket Jaywant[2]

*[1]Assistant Professor of Pharmacognosy, [2]B.Pharma Student, Dr. L. H. Hiranandani College of Pharmacy, CHM Campus, CHM Road, Opposite Ulhasnagar Railway Station, Ulhasnagar, Maharashtra.

ABSTRACT

Vaishvanara Churna is an Ayurvedic polyherbal formulation used traditionally as a *Saraka* (laxative), *Shotaprasamana* (anti-inflammatory) and for the treatment of *Amavata* (Rheumatoid Arthritis), management of *Vibandha* (Constipation), *Udaravedana* (abdominal pain), and *Hridroga* (heart disease). All the ingredients used in Ayurvedic formulations are of natural origin, owing to which the standardization of Ayurvedic formulations is difficult, which is the need of the hour. *Vaishvanara Churna* is one such Ayurvedic formulation. The Ayurvedic and other traditional systems of medicines are effective in curing several ailments, but the problem with them is they lack in satisfying quality assurance and quality control parameters, which help us recognize the quality of the formulation. Reliable clinical study data is not available, which thereby increases the scope of research in this area of medicine.

This article aims at defining standards by comparing different marketed formulations and an in-house formulation for the evaluation of *Vaishvanara Churna*. Our study basically intends to highlight the variations observed in marketed samples of Ayurveda formulations, using *Vaishvanara Churna* as an example. It is an unbiased study and have no intentions to claim anyone of the samples is superior to the other.

The *Churna* was evaluated for its pharmacognostic, pharmaceutical and microbial parameters. The results obtained were within the limits prescribed by Ayurvedic Pharmacopoeia.

KEYWORDS: *Vaishvanara Churna*, Ayurvedic, polyherbal, Rheumatoid Arthritis, laxative, standardization.

INTRODUCTION

Vaishvanara means Fire in Sanskrit. *Vaishvanara Churna* contains *Saindhavalavana* (Rock salt), *Yamani* (*Trachyspermu mammi*), *Sunthi* (*Zingiber officinalis*), *Ajamoda* (*Apium leptophyllum*), and *Haritaki* (*Terminalia chebula*). *Vaishvanara Churna* is used as a *Saraka* (laxative), *Shotaprasamana* (anti-inflammatory)[4] and for the treatment of *Amavata* (Rheumatoid Arthritis)[2,3,5]. It is also used in the management of *Vibandha* (Constipation), *Udaravedana* (abdominal pain), *Hridroga* (heart disease), *Gulma* (lump in the abdomen), *Sula* (pain), *Pleeha* (splenic disorder), *Pachana* (digestive)[2,3,5]. It is also recommended for use as *Dipana* (appetizer) and *Vadanasamana* (analgesic)[2,3,5].

Saindhavalavana is a composition of sodium chloride, traces of sodium bicarbonate, calcium sulfate, calcium chloride, and magnesium chloride. *Saindhavalavana* is traditionally used as an antiulcer, laxative, aphrodisiac, and antiseptic[1-6]. *Yamani* is popularly known as *Ajowan*. Fruits of *Yamani* are traditionally used as anti-inflammatory, laxative, diuretic, antiseptic, antispasmodic, tonic, carminative and stimulant. It is also effective in treating sore throat, bronchitis, diarrhea, and cholera[1-6]. *Sunthi* is used in treating motion sickness, nausea, vomiting, gastritis, diarrhea, indigestion, abdominal colic, intestinal parasites, arthritis, colds, influenza, bronchitis, flatulence, muscle spasms, food poisoning and certain heart conditions and also to promote perspiration, and digestive systems. *Haritaki* is commonly known as *Chebulic myrobalam*. *Terminalia chebula* is used in traditional medicines to treat constipation, kidney, and urinary disorders. It can also be used as a homeostatic, antitussive, diuretic, and ionotropic remedy. Altogether, *Vaishvanara Churna* shows significant laxative activity.[1-6]

DOSE: 5gm daily in divided doses can be taken along with buttermilk, ghee, warm water.[1]

MATERIALS AND METHODS

All the ingredients obtained were of pharmacopoeial quality. *Saindhavalavana* was roasted at low temperature until free from moisture. The ingredients were powdered individually and were passed through sieve number 85. Each ingredient was weighed separately and mixed together in a specified ratio. The resulting mixture was passed through sieve number 44 to obtain a homogenous blend. The product was packed tightly to protect from light and moisture.[1]

Pharmacognostic Evaluation

All the individual powdered raw ingredients and finished products were evaluated for their authenticity by pharmacognostic tests such as organoleptic evaluation and microscopic characteristics.[2,3] Representative samples of all the ingredients, marketed formulations and in-house formulations were exposed to an environment containing bleaching agent, phloroglucinol and concentrated hydrochloric acid and iodine. The resulting dispersion was mounted with glycerin on glass slide, for the purpose of microscopic evaluation.[1-3,5]

Pharmaceutical Evaluation

For pharmaceutical evaluation[8] of the products, tests such as particle size, tap density, bulk density, angle of repose, Hausner's Ratio, Carr's Index, test for chloride, pH, loss on drying, alcohol soluble extractive value, water soluble extractive value, total ash, acid insoluble ash, Thin Layer Chromatography, and Sodium Flame Photometry were performed to standardize and compare the marketed and in-house polyherbal formulations.[3,8]

Microbial Evaluation

The marketed and in-house formulations were evaluated for their microbial load. Media such as Nutrient agar media and Mac Conkey agar media were used for detecting microorganisms and E.coli respectively. The plates were incubated at 37°C for 24-48 hours. Duplicates and control were maintained.

Table 1 : Components of Marketed formulation 1, Marketed formulation 2 and In-house formulation of *Vaishvanarachurna*[1]

Sr. no.	Common name	Scientific name	Proportion
1	*Saindhavalavana*	Rock salt	2 parts
2	*Ajowain*	*Trachyspermumammi*	2 parts
3	*Ajmoda*	*Apiumleptopyllum*	3 parts
4	*Sunthi*	*Zingiber officinalis*	5 parts
5	*Haritaki*	*Terminalia chebula*	12 parts

Table 2 : Test results of Marketed Formulation 1, Marketed Formulation 2 and In-house Formulation and Standards [1]

Sr no.	Tests	Results			Standards
		Marketed formulation 1	Marketed formulation 2	In-house formulation	
1	Particle size	Fine powder	Fine powder	Fine powder	-
2	Tap density	0.52 gm/cc	0.66 gm/cc	0.62 gm/cc	-
3	Bulk density	0.3 gm/cc	0.4 gm/cc	0.3 gm/cc	-
4	Hausner's ratio	1.73	1.65	2.06	-
5	Carr's index	73.33%	65%	106%	-
6	Angle of repose	33.0706°	26.75°	33.164°	-
7	Test for chloride	Curdy white precipitate seen	Curdy white precipitate seen	Curdy white precipitate seen	-
8	Loss on drying	0.27%	0.37%	0.22%	Not more than 10%
9	Alcohol soluble extractive	26.55%	17.45%	36.04%	Not less than 34%
10	Water soluble extractive	88.64%	60.54%	47.53%	Not less than 42%
11	Total ash	14.68%	14.56%	13.48%	Not more than 15%
12	Acid insoluble ash	1.4%	1.2%	1.6%	Not more than 1.8%
13	Sodium flame photometry	32 ppm	60 ppm	29 ppm	Not less than 3%

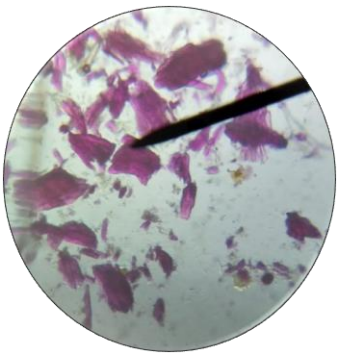

Fig 1: Sclereids (*Haritaki*)

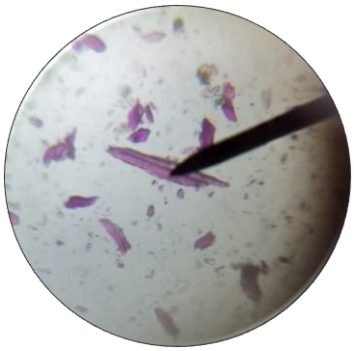

Fig 2: Pitted Vessel (*Haritaki*)

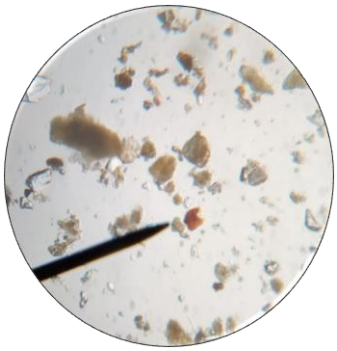

Fig 3: Yellowish Brown Vittae (*Ajmoda*)

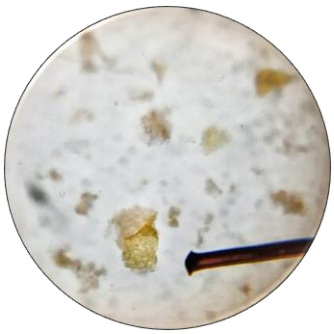

Fig 4: Endosperm (*Yavani*)

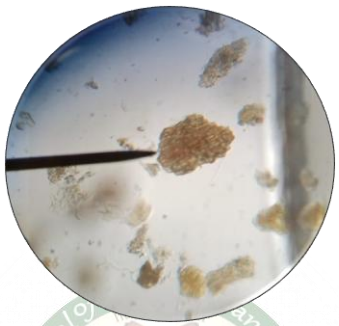

Fig 5: Mesocarp (*Ajmoda*)

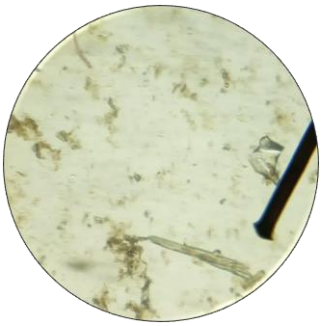

Fig 6: Non Lignified Fiber (*Ajmoda*)

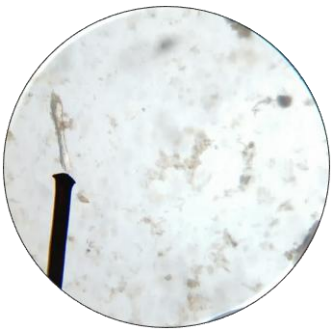

Fig 7: Trichomes (*Ajmoda*)

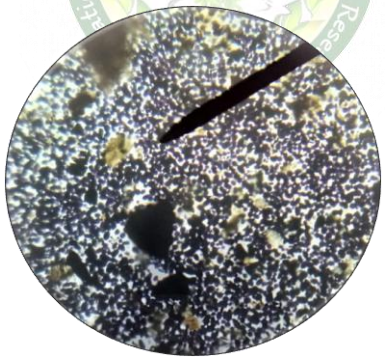

Fig 8: Starch Grains (*Sunthi*)

Fig 9: Endocarp (*Haritaki*)

Spot	Marketed Formulation 1 (R_f Value)	Marketed Formulation 2 (R_f Value)	In-house Formulation (R_f Value)
Spot 1	0.125	0.106	0.087
Spot 2	0.287	0.375	0.287
Spot 3		0.487	0.487
Spot 4		0.593	0.587

Table 3: Thin Layer Chromatography Results and R_f Values[1-3] of Marketed Formulation 1, Marketed Formulation 2 and In-house Formulation. Solvent System - Toluene: Ethyl acetate :: 5: 1

Fig 10: Marketed Formulation 1- Microbial growth seen in Nutrient Agar medium but absent in Mac Conkey medium.

Fig 11: Marketed Formulation 2- Microbial growth seen in Nutrient Agar medium but absent in Mac Conkey

Fig 12: In-house Formulation- Microbial growth seen in Nutrient Agar medium but absent in Mac Conkey medium

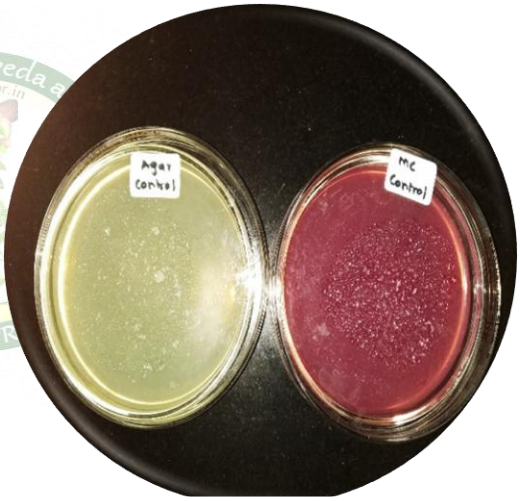

Fig 13: Control for Nutrient Agar medium and Mac Conkey medium

RESULTS AND DISCUSSIONS

Pharmacognostic Evaluation of the marketed formulations and In-house formulation of *Vaishvanara Churna* showed brownish green colour, astringent taste, and characteristic aromatic odour. Microscopic Evaluation showed characteristics such as endocarp, mesocarp, endosperm, lignified and nonlignified fibres, sclereids, pitted vessels and oleoresin cells. On staining the sample with Iodine solution, starch crystals were observed[1-3,5]. Table 1 indicates the components of all the three formulations and the ratios in which they are present[1,2]. Table 2 indicates the pharmaceutical tests performed on the *Churnas* and the results obtained, Standards as prescribed in the Ayurvedic Pharmacopoeia are also included[1-3]. Microbial Limit tests revealed microbial growth in the Nutrient Agar medium, indicating the presence of microbes in the formulation; however, the Mac Conkey Agar medium showed no microbial growth, indicating the absence of E.coli. Table 3 indicates the results obtained by performing Thin Layer Chromatography, by using Toluene: Ethyl acetate::5:1 as the solvent system[1,3,5]. In an overview, the pharmacognostic and pharmaceutical tests performed on *Vaishvanara Churna* yielded results which were well within the limits as prescribed in the Ayurvedic Pharmacopoeia.

CONCLUSION

The overall aim of drug standardization is to have uniformity, across the manufactures, with respect to its chemical and biological properties. Standardization methods should take into consideration all aspects contributing to the quality of the herbal drugs. The development of modern analytical tools in testing the various quality parameters for an effective quality control herbal product cannot be over emphasized. Standardization minimizes batch to batch variation; assure safety, efficacy, quality and acceptability of poly herbal formulations. The traditional approach towards standardization is insufficient for current herbal market and hence there is need for more advanced techniques for standardization.

The main purpose of our study is to highlight and bring to notice the variations observed in marketed samples of Ayurveda formulations, using *Vaishvanara Churna* as an example of an Ayurvedic formulation. It is an unbiased study and have no intentions to claim anyone of the samples is superior to the other. Though there are several factors that make the standardization of Ayurveda formulation a great challenge, drastic variations within the same product will raise questions on the authenticity and credibility of the product. The need of the hour is better standardization protocols and quality measures for uniformity of formulations across the Ayurveda drug industry. In the era of globalization of Ayurveda, it is necessary to have utmost attention on the quality control parameters for the therapeutic formulations. Our observations are expected to open up discussions on the need of consistency and uniformity of formulations across the global Ayurvedic drug manufacturing industry.

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***Address for correspondence**
Mrs. Bhogale Vijaya Prakash
Assistant Professor of Pharmacognosy, Dr. L H Hiranandani College of Pharmacy, Ulhasnagar, Maharashtra.
Email: vijaya.bhogale@dlhhcop.org
Contact : 9833803153