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Research Article

PHARMACOGNOSTIC AND PHYTOCHEMICAL EVALUATION OF *VAISHVANARA CHURNA*

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ABSTRACT

Vaishvanara churna is an Ayurvedic classical formulation prescribed in the management of *Amavata* (Rheumatoid arthritis) and digestive disorders. Though the drug is being used extensively in Ayurvedic practice for management of various disease conditions, its standards are not set as per the pharmacopeia. To maintain the uniformity in the efficacy of the medicine it is necessary to establish the quality standards so that the product can be screened at the point of production. To determine the standards for quality evaluation of *Vaishvanara churna* pharmacognostic, phytochemiacl, photomicrographic and analysis of aqueous and alcoholic extractives were determined. Further, the microbial quality of the *Churna* was also found to be well within the maximum limit proscribed by the WHO and the European Pharmacopeia. As there are no standards prescribed for the combined formulations, the values observed in the present study may be considered as acceptable before the final product is cleared from the production unit. Presence of higher active phytoconstituents and higher concentrations in aqueous compare to alcoholic extracts suggested the scientific reason behind the recommendation of *Vaishvanara churna* administration in water medium.

KEYWORDS: *Vaishvanara churna*, aqueous extracts, phytoconstituents, Pharmacy.

INTRODUCTION

Vaishvanara churna is one of the most effective formulations used in the treatment of arthritis, constipation, abdominal pain and for improvement of digestion and strengthen immunity. Polyherbal formulation *Churna* is prepared by mixing appropriate concentrations of *Saindhavalavana* (Rock salt), *Ajowan* (*Trachyspermum ammi*), *Ajamoda* (*Carumroxburghianum*), *Shunti* (*Zingiber officianale*) and *Haritaki* (*Terminalia chebula*). Therapeutic uses of *Vaishvanara churna* as mentioned in Ayurvedic literatures are in treatment of *Amavata* (Rheumatoid arthritis), *Gulma* (lump in abdomen), *Hradroga* (heart diseases), *Sula* (pain), *Pleeha* (spleenic disorder), *Granthi* (cyst), *Vibandha* (constipation), *Vataroga*. It was also recommended for use as *Dipana* (appetizer), *Pachana* (digestive), *Vadanasamana* (analgesic), *Shotaprasamana* (anti-inflammatory) and *Vatanulomana*[1].

In depth evaluation of the each of the components of the *Vaishvanara Churna* reveals medicinal value of the individual drugs. In addition to supply of essential minerals rock salt aids in secretion of salivary and digestive juices thereby improving the digestion. Additionally the rock salt improves appetite, remove gas and act as laxative. *Ajwain* (*Trychospermum ammi*) is a potent stimulant, antispasmodic and carminative in action which is very much helpful in digestive disorders[2]. Similarly antidiarrheal and antispasmodic effect of *Ajamoda* (*Carum roxburghianum*), anti-emitic, anti-ulcerogenic, anticholinergic effect of *Zingeber officianle* and prokinetic effect of *Terminalia chebula*[3-5] are responsible for the effectiveness of *Vaishvanara churna* in gastric disorders. The *Churna* is also used commonly used as immunostimulant, laxative, analgesic, and anti-inflammatory agent. *In vitro* efficacy of *Vaishvanara churna* as antiurolithic agent[6] and laxative agent[7] has been reported recently.

Though several studies have been reported on the pharmacognostic and phytochemical characters of each of the components there is no such study on the *Churna* preparation. Hence the present study was planned to evaluate the pharmacognostic and phytochemical characteristics of *Vaishvanara churna* prepared in Sankara Pharmacy of Sri Jayendra Saraswthi Ayurveda College and Hospital, Chennai.

Materials and methods

Completely dried raw plant materials were collected from Sankara Pharmacy of Sri. Jayendra Sarswathi Ayurveda College and Hospital, Chennai. The *Churna* was prepared by mixing the ingredients in appropriate proportions (Table 1). All the laboratory analysis of the samples were done in the Dravyaguna Department laboratory at Sri Jayendra Sarswathi Ayurveda College and Hospital, Chennai.

Pharmacognostic evolution:

Raw drugs were identified and authenticated at the department of Dravyaguna, SJSAC, Chennai. The identification was based on the morphological and organoleptic features. For microscopy study about 2g of *Churna* was washed thoroughly with the hot water to remove the salt[4]. Briefly, few milligram of drug was mixed with separately with chloral hydrate, iodine solution or 2% aqueous potassium hydroxide and mounted with glycerin on microscope attached with a camera to obtain photo micrographic pictures.

Pharmaceutical evaluation

Pharmaceutical study of a drug like, total ash, water soluble ash, acid insoluble ash, aqueous extractive

value, alcoholic extractive value and pH was carried out to standardize and validate the polyherbal formulation using standard laboratory methods[8].

Microbial quality of the product

Specific media were used for detection of different heterotropic bacteria like Enterobacteriaceae family (Violet Red Bile Glucose Agar-VRBG) and specifically for E. coli (Eosin Methylene Blue Agar- EMB), Salmonella (Xylose lysine deoxycholate agar-XLD agar), and yeast (Potato Dextrose Agar-PDA), respectively. All the plates were incubated at 37 °C for 24–48 h. Triplicates were maintained to obtain mean value and averages bacterial densities values were expressed as CFU/g[9].

Plates with 25-250 CFU calculated as

$$N = \frac{\sum C}{[(1\times n_1)+(0.1\times n_2)\times(d)}$$

where:

N = Number of colonies per ml or g of product

∑ C = Sum of all colonies on all plates counted

n1 = Number of plates in first dilution counted

n2 = Number of plates in second dilution counted

d = Dilution from which the first counts were obtained

Results and discussion

Pharmacognostic evaluation of the *Churna* revealed the brownish green color, astringent taste with aromatic smell. Pharmaceutical evaluation of the *Churna* revealed the components as given in Table 2 and extractive values are presented in Table 3.Diagnostic characters of *Vaishvanara churna* under the microscope are mentioned in Fig 1. Five timer levels of aqueous extract (11.2%) compare to alcoholic extract (2.2%) suggest the importance *Churna* preparation which was also confirmed by the chemical constituents in both extracts (Table 3). Aqueous extract of the *Churna* showed higher active constituents compare to alcoholic extract suggesting the medicinal value of the aqueous preparations. Hence the *Churna* is recommended to be administered orally dissolved in water. Photomicrography suggested the presence of fibers, oil globules and different type of cellular structures suggesting the presence of mixed ingredients. Safety of the pharmaceutical product is to be maintained as recommended by the regulatory agencies. In the present study microbial quality of *Churna* was well within the maximum limits prescribed by the European Pharmacopia and World Health Organization (WHO)[9].

Table 1: Components of *Vaishvanara churna*

S.No.	Common name	Scientific name	Proportion
1.	*Saindhavalavana*	Rock salt	2 parts
2.	*Ajawain*	*Trychospermum ammi*	2 parts
3.	*Ajamoda*	*Carum roxburghianum*	3 parts
4.	*Shunti*	*Zingeber officianle*	5 parts
5.	*Haritaki*	*Terminalia chebula*	12 parts

Table 2: Physicochemical parameters of *Vaishwanara curna*[8]

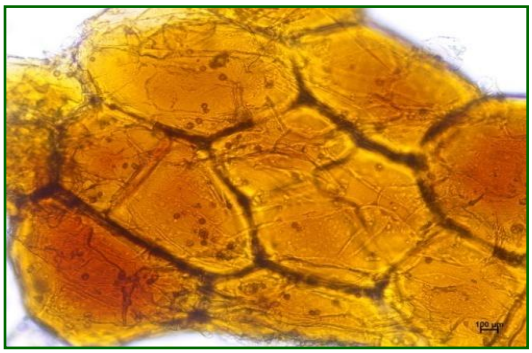
S.No.	Test parameters	Percentage
1.	Total ash value	8.8%
2.	Water soluble ash	3.38%
3.	Acid insoluble ash	1.8%
4.	Aqueous Extractive value	11.2%
5.	Alcoholic Extractive values	2.2%
6.	pH	3.24

Table 3: Physiochemical analysis of *Vaishwanara curna*[8]

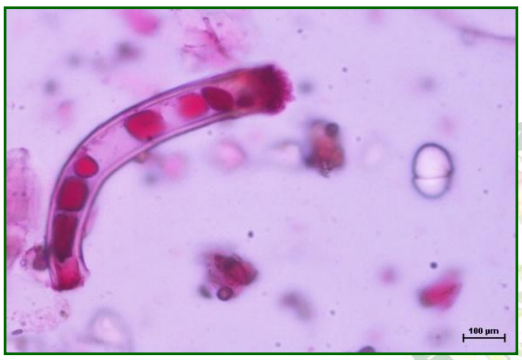
S.No.	Test	Aqueous extract	Alcoholic extract
1.	Test for proteins Millions test Ninhydrin test	 + _	 _
2.	Test for carbohydrates Fehling's test Benedict's test	 + +	 _ _
3.	Test for phenols and tannins	+ +	+ +
4.	Test for flavanoids Alkaline reagent test	+	 _
5.	Test for saponins	+	+
6.	Test for glycosides Keller kilani test Libermann's test Salkowskis test	 + _ +	+ _ +
7.	Test for steroids	+	+
8.	Test for alkaloids	+	_

Table 4.Microbial quality of *Vaishvanara curna*[9]

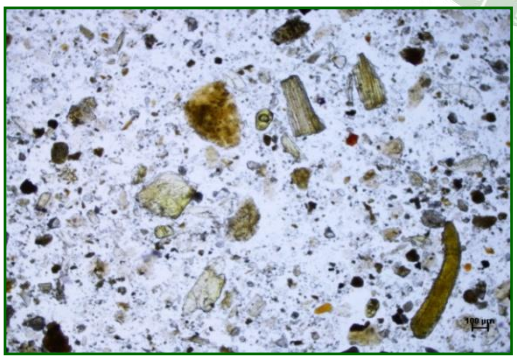
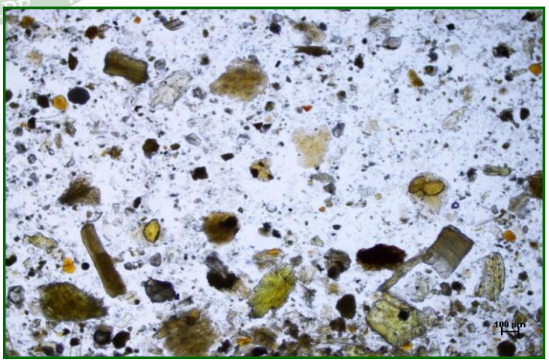
S. No.	Type of microbe(CFU/g)	Values in present study	European Pharmacopeia	WHO
1.	Total aerobic bacteria	100	1,00,000	1,00,000
2.	Enterobacteriaceae	Nil	1000	1000
3.	*E. coli*	Nil	Nil	10
4.	*Salmonellas* pp	Nil	Nil	Nil
5.	Yeast	200	10,000	1,000



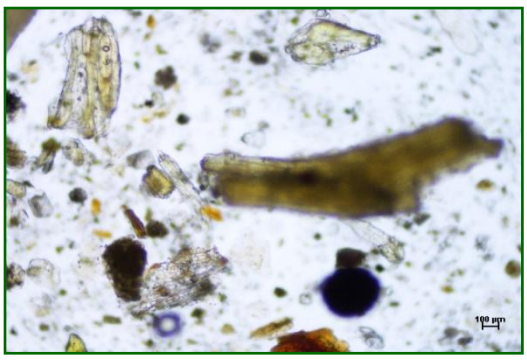
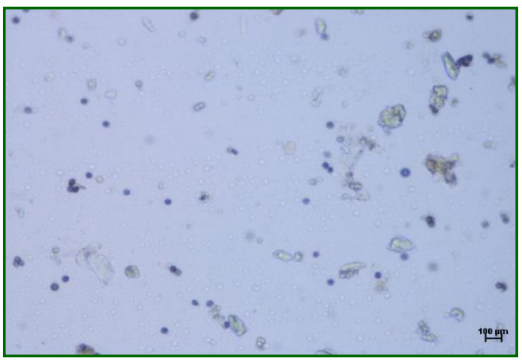

Mesocarp Annular vessels



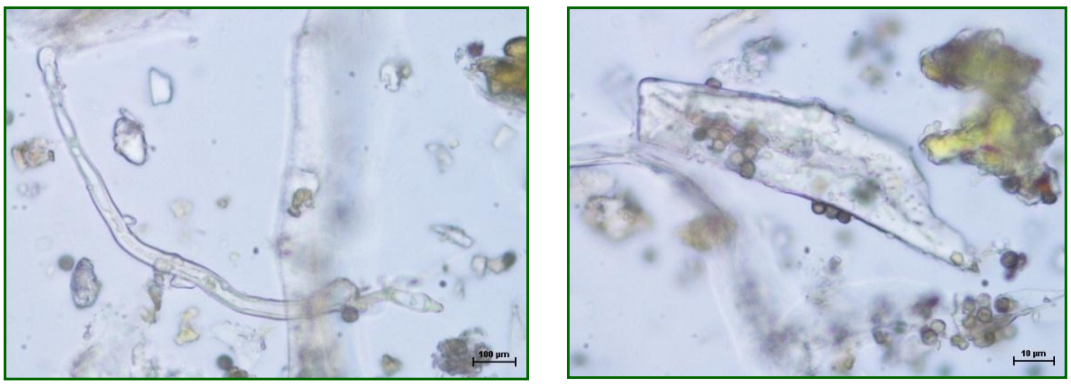

Pitted vessels Stone cells

Different cell structures

Oil and lignified cells Starch cells



Starch cells with long fiber Scleroid cell

CONCLUSIONS

Results of the study suggest the general characters of the *Vaishvanara churna* which may be considered as standard and used during the quality evaluation of the drug in the pharmacy. Presence of active components in aqueous extract suggests the scientific reason behind the recommendation of *Churna* administration dissolving in water.

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