Photochemical evaluation of Polyherbal formulation widely used for the treatment of dyslipidemia

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ABSTRACT

Standardization of herbal formulations is essential in order to assess the q uality of drugs, based on the concentration of their active principles, physical and chemical standards. This article reports on standardization of a Polyherbal ayurvedic for mulation used as anti-hyperlipidemic. Specific morphological parts of the plants are us ed in the Polyherbal formulation. Polyherbal formulation has been standardized on the basis of organoleptic properties, physical characteristics, and physico-chemical propert ies. To determine the standards for quality evaluation of Poondu 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.

KEYWORDS

Phytochemicals, herbal medicine, Reverse pharmacology, dyslipedemia

INTRODUCTION

Poondu 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. Although it clinically giving better results for dyslipedemia. Polyherbal formulation *Churna* is prepared by mixing appropriate concentrations of *Poondu (Allium sativa)*, *Ajowan* (*Trachyspermum ammi*), *Shunti* (*Zingiber officianale*) and *Haritaki* (*Terminalia chebula*). Therapeutic uses of *Poondu churna* as mentioned

in Ayurvedic literatures are in treatment of *Gulma* (lump in abdomen), *Hradroga* (heart diseases), *Dhoola* (Obesity), *Pleeha* (spleenic disorder), *Granthi* (cyst), *Vibandha* (constipation). It was also recommended for use as *Dipana* (appetizer), *Pachana* (digestive), *Vadanasamana* (analgesic), *Shotaprasamana* (anti-inflammatory) and *Vatanulomana.*

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 *Poondu churna* prepared by Sankara vaidya, Kozhocodu.

MATERIALS AND METHODS

Physico-chemical studies like total ash, water soluble ash, acid insoluble ash, water and alcohol soluble extract, loss on drying at 105°C and successive extractive values by soxhlet extraction method were carried out as per the WHO guidelines5. Preliminary phytochemical tests were performed as per the standard methods.

Completely dried raw materials were purchased from farms and prepared by Sankara vaidya at kozhicodu, Kerala. The *Churna* was prepared by mixing the ingredients in appropriate proportions (Table 1). All the laboratory analysis of the samples were done in the Inclab Bangalore.

Preparation of polyherbal formulation

All the ingredients were collected, dried and powdered separately, passed through 100 sieve and then mixed together in specified proportions in a geometrical manner to get uniform mixture.

Standardization parameters

The various standardization parameters studied were Organoleptic properties, Physico-chemical investigations, determination of pH, Fluorescence analysis, Preliminary Phytochemical analysis, determination of moisture content, swelling factor, determination of viscosity, surface tension and density, determination of crude fat and determination of physical characteristics of powder formulation

Organoleptic evaluation

The organoleptic characters of the samples were evaluated based on the method.Organoleptic evaluation refers to evaluation of the formulation by color, odor, taste and texture etc.

Physicochemical investigations

Physico-chemical investigations of formulations were carried out were the determination of extra-ctive values and ash values.

Determination of pH

1% solution of Polyherbal formulation was prepared in distilled water and pH was determined using pH meter,

Fluorescence analysis

Fluorescence characters of powdered plant ma terial with different chemical reagents were det ermined under ordinary and ultraviolet light9.1 mg of the Polyherbal sample was taken in a glas s slide and treated with various reagents for the presence of their fluorescence characters under ultra-violet lamp.

Preliminary Phytochemical analysis

Preliminary qualitative phytochemical analysis of all the extracts was carried out by employing stan dard conventional protocols 10- 12.

Poondu (*Allium sativa*), *Ajowan* (*Trachyspermum ammi*), *Shunti* (*Zingiber officianale*) and *Haritaki* (*Terminalia chebula*)

S.No	Sanskrit name	Botanical name	Quantity used
1	Poondu	Allium sativum	20gm
2	*Ajowan*	*Trachyspermum ammi*	10gm
3	*Shunti*	*Zingiber officianale*	5gm
4	*Haritaki*	*Terminalia chebula*	5gm

Table 2. Organoleptic characters

Characters	Inference
Appearance	Churna
Colour	Brown
Odour	Pungent
Taste	Bitter
Texture	Coarse powdery
Particle size	100 Mesh size

Table 3: Physio-chemical extractive characteristics of Poly herbal formulation

S. No	Parameter	Percentage
1	Alcohol soluble extractive	45 ± 0.12
2	Hexane soluble extractive	18 ± 0.13
3	Chloroform soluble extractive	8± 0.2
4	Ethyl acetate extractive	15 ± 1.2

Table 4. Physiochemical characters of poly herbal formulation

S. No	Parameters	Percentage mean in consecutive 3times
1	Ash value	10.22± 0.11
2.	Acid insoluble ash	4.33± 0.18
3	Water soluble ash	7.59 ± 1.2
4	Particle size	100 MS
5	pH	7.0

Determination of moisture content and swelling factor

Moisture content was determined by loss on dryi ng (LOD) method. 3 gm of the weighed quantity

of the drug was taken and kept in oven at 105 ◦C t ill a constant weight was obtained. Amount of m oisture present in the sample was calculated a s reference to the air dried drug. Swelling fac tor is estimated for the amount of mucilage p resent in the drug. The technique has been accep ted as an official method for evaluation by variou s pharmacopoeias. One gram of the Polyherbal was taken and kept for 24 hours in a graduat ed, stoppered cylinder, in contact with the wate r up to the mark of 20 ml. After 24 hours the in crease in volume was noted.

Table 5. Phytochemical analysis of poly herbal churna

S. No	Test	Inference
1	Test for proteins	
	Millions test	+
	Ninhydrin test	+
2	Test for phenols	+
3	Test for tannins	_
4	Test for glycosides	
	Keller kilani test	-
	Libermann's test	-
	Salkowskis test	+
5	Test for steroids	+

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 & 4. Diagnostic characters of *poondu churna* under the microscope are mentioned. 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. 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. The results of preliminary phytochemical analy sis of are given in Table-5.

CONCLUSIONS

Results of the study suggest the general characters of the *Poondu churna* which may be considered as standard and used during the quality evaluation of the drug in the pharmacy. The prepared formulation was screened for va rious standardization parameters as per auurve dic pharmacopoeial standards. Presence of active components in aqueous extract suggests the scientific reason behind the recommendation of *Churna* administration dissolving in water.

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