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Research Article

STANDARDIZATION OF IN HOUSE PREPARED POLYHERBAL FORMULATION - SHIVAKSHAR PACHAN CHURNA

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ABSTRACT

Standardization of herbal formulation is essential in order to assess the quality of drugs for therapeutic value. According to an estimate of World Health Organization (W.H.O) nearly 80% of populations of developing countries rely on traditional medicines. The World Health Organization (WHO) in 1999 has given a detail protocol for the standardization of herbal drugs comprising of a single content, but very little literature is available for the standardization of poly-herbal formulation. We have developed a simple scheme for standardization and authentification of Shivakshar Pachan Churna. The set parameters were found to be sufficient to standardize the Shivakshar Pachan Churna and can be used as reference standards for the quality control/ quality assurance study mostly on plant drugs for their primary health care needs.

Keywords: Herbal Formulation, Shivakshar Pachan Churna.

INTRODUCTION

Carminative are the agents that prevent formulation of gas in the gastro intestine tract or facilitate the expulsion of said gas, thereby combating flatulence. This gas is result of something they will be eating or of taking certain medications. There are two ways in which a carminative can combat flatulence. Some do by suppressing the formation of gas in the intestine or, which will reduce the amount which need to be expelled. The other actually promotes gas expulsions, with the goal of essentially clearing out the intestines so that someone will stop experiencing flatulence unexpectedly.[1] Shivakshar pachan churna consists of 10 ingredients. Ginger (*Zingiber officinalis*) , Pepper (*Piper nigrum*), Long pepper *(Piper longum*), Ajamoda (*Trachyspermum ammi*), Krishnajeeraka *(Nigella sativa*), Jeeraka (*Cuminum cyminum*), Hingu (*Ferula asafoetida*) Haritaki (*Terminalia chebula),* Saidhava (Rock salt), Sarjakshara. As available literature and market survey states that the above formulation available in market is product of numerous companies which might have deviations in quality as well as quantity of ingredients used in this formulation. Hence an opportunity has to be made to formulated this formulation in house and then proceed for standardization.

MATERIALS AND METHODS

Collection & Preparation of *Shivakshar Pachan churna*

The crude drugs used in preparation of *Shivakshar Pachan churna* were collected from local Market of Dehradun in March 2013. All plant parts were then dried in shade, powdered and passed through sieve no. 60 and lastly packed in a well closed container to protect them from moisture. Each ingredients *5gm weight and* separately, mixed together to obtain a homogeneous blend.

Organoleptic Characteristics

The formulated powder was tested for organoleptic characteristic. (Table 1)

Colour- Light Brown, *Odour*- Characteristic, *Taste*- Spicy, Texture: Smooth

Pharmacognostical Studies[2]

The leaf powder was studied for their physico-chemical constant which include ash values, extractive values. (Table 2)

Determination of Physical Characteristics

The powdered drug was taken and was kept for determination of powder characteristics like bulk density, true density, angle of repose, hausner's ratio etc.[3] (Table 3)

Determination of Moisture Content

To estimate the loss on drying 3 gm of air dried crude drug or the prescribed quantity of the material as specified for that specific substance is accurately weighed in a dried and tared petridish.[2] the substance is to be dried to constant mass or for the prescribed time as specified. (Table 3)

Determination of Florescence analysis of Powder

One mg of powdered drugs of each formulation was exposed to ultraviolet light at wavelength of 254 nm and 365 nm and in daylight while wet after being treated with different reagents[4] (Table 4).

Preliminary phytochemical test

Preliminary phytochemical test for hexene, benzene, chloroform and alcohol extract of the drug were carried out. It shows the presence of alkaloids, flavonoids, sugars, tannins, saponins.[5] (Table 5).

Powder microscopy

The churna powder was taken and was examined microscopically to identify the various features like phloem fibres, parenchyma, starch grains, endosperms, calcium oxalate crystals, oil glands etc by using various reagents.[6] (Table 6)

RESULT AND DISCUSSION

In house formulation was prepared in accordance with the Ayurvedic Formulary of India. As part of standardization procedure, the finished product *Shivakshar Pachan churna* was tested for relevant physical and chemical parameters. The churna is brown in colour. The powder was smooth, having *Colour*- Light Brown, *Odour*- Characteristic, *Taste*- Spicy. Quality tests for different *Shivakshar Pachan churna* and its individual ingredients were performed for moisture content; ash content, water soluble extractive, methanol soluble extractive, acid insoluble ash and water insoluble ash were found to be within standard ranges. The extractive values and ash values of churna, is given in Table 2. Variations were observed in most of the physicochemical parameters studied. The total Ash value was found 1.2% w/w. Acid insoluble ash value was found to be 2.3% w/w. On the contrary, water soluble ash percentage was found 1.5 % w/w and sulphated ash was found to be 0.9% w/w. The extractive values of formulations in water were found to be much higher than other solvent's extractive values. Loss on drying at (105ºC) is also presented in Table 3. In fluorescence analysis the powder samples were exposed to ultraviolet light at wavelength of 254nm and 366nm and day light after being treated with different reagents as reported in Table 4. Fluorescence analysis results shows whether any fluorescent ingredients are present or not, here we have found there was no such material found in any of formulation and individual ingredients either. The true and bulk density was calculated and to find the good flow angle of repose was also observed, the flow ability of the formulation was found to be poor in both market formulation and in house formulation, which was further confirmed by high values of Hausner ratio (Table 3). Presence of reducing sugars, steroids, flavanoids, saponins and tannins are prominent in various extracts (Table 5). Presence of starch grains and calcium oxalate in powder microscopic evaluation. (Table 6)

SUMMARY AND CONCLUSION

Ayurvedic medicine *Shivakshar Pachan churna* has been standardized by intervention of scientific quality control measures in the traditional preparation describe in classical texts. Pharmacognostic

characters established for the raw material could be employed as Q.C, standards for evaluating its identity and can be used for routine analysis of Purity and potency of the material and formulations following procedure given could be performed in QC\QA laboratory of pharmaceutical house. Our findings suggest that, ayurvedic polyherbal preparations extracts have great potential as carminative and can be used in the treatment of diarrhoea. Scientific evaluation of these herbal preparations gives better information regarding the anti-diarrhoeal efficacy of herbal medicine available in India. This study supports the use of these herbal preparations not only as the dietary supplement but also as agent to prevent or control the enteric bacterial infections.

Table 1: Organoleptic properties of Shivakshar Pachan Churna

S.No.	Parameter	Result
1.	Appearance	Smooth
2.	Color	Light brown
3.	Odour	Characteristic
4.	Taste	Spicy
5.	Texture	Powder

Table 2: Extractive values of Shivakshar Pachan Churna

S. No	Types of extractive value	Percentage yield
1.	Petroleum ether	3%
2.	Chloroform	3%
3.	n- hexane	2%
4.	Ethanol	5%
5.	Water	31%

Table 3: Pre formulation studies of Shivakshar Pachan Churna

S. No.	Parameters	Value
1.	Bulk density gm/cm^3	0.55
2.	Tapped density	0.641
3.	Hausner's ratio	0.858
4.	Carr's index	14.19
5.	Angle of repose	6.3
6.	Loss on drying	6%

Table 4: Fluorescence Analysis of Shivakshar Pachan Churna

S.No	Sample	Visible light	Short UV 254 nm	Long UV 365 nm
1.	Drug	White brown	Brown	Blackish brown
2.	Drug+ acetic acid	Reddish brown	Brown	Black
3.	Drug+ $FeCl_3$	Greenish	Dark greenish	Black
4.	Drug+ HNO_3	Reddish orange	Brown	Deep black
5.	Drug+ Bromine	Light brown	Brown	Deep brown
6.	Drug+ iodine	Yellowish green	Brown	Deep brown
7.	Drug+ H_2SO4	Reddish white	Reddish yellow	Deep brown
8.	Drug+ KOH	Orange yellow	Brown	Black
9.	Drug+ NaOH	Light yellow	Greenish	Black

Table 5: Phytochemical Screening of Shivakshar Pachan Churna

S.No	Test	Method	Chloroform	Petroleum ether	Ethanol	Water
1	Carbohydrates	Molisch test	-	-	-	-
		Fehling test	-	-	-	+
2	Alkaloids	Mayer's test	+	+	+	+
		Dragendroff's test	+	+	+	+
		Hager's test	-	-	+	+
3	Glycosides	Brontrager's test	-	-	+	+
		Legal test	-	-	-	-
4	Saponin	Hemolysis test	-	-	-	-
		Foam test	-	-	-	-
5	Flavonoids	Shinoda Test	-	-	-	+
6	Tannin	Catechin test	-	-	+	+
		Match stick test	-	-	+	-
7	Amino acid & Proteins	Ninhydrin test	-	-	+	+
		Biuret test	-	-	-	-

Table 6: Powder microscopy of Shivakshar Pachan Churna

S.No.	Reagent Used	Observation
1	Phlorogucinol + HCl	Vascular bundles, fibres
2	Iodine solution	Starch Grains
3	HCl	Calcium oxalate
4	Picric acid	----
5	Ruthenium red	----

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