



## Research Article

### STANDARDIZATION OF IN HOUSE PREPARED POLYHERBAL FORMULATION *RAJA PRAVARTINI CHURNA*

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#### ABSTRACT

The present study is to set up and check the standardization parameter for a poly-herbal formulation *Raja Pravartini Churna*. The marketed formulation and in house prepared formulation with same formula is taken for study. The parameter for standardization are organoleptic character, loss on drying, bulk density, tapped density, angle of repose, carr's index, husner's ratio, florescence analysis, powder microscopy, Phytochemical screening, ash values, extractive values etc were evaluated during the study on both formulation. The set parameters were found to be sufficient to standardize the *Raja Pravartini 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, *Raja Pravartini Churna*.

#### INTRODUCTION

Some women get through their monthly periods easily with few or no concerns. Their periods come like clockwork, starting and stopping at nearly the same time every month, causing little more than a minor inconvenience. However, other women experience a host of physical and/or emotional symptoms just before and during menstruation. From heavy bleeding and missed periods to unmanageable mood swings, these symptoms may disrupt a woman's life in major ways. If one or more of the symptoms is experienced before or during your period causes a problem, one may have a menstrual cycle "disorder." These include abnormal uterine bleeding (AUB), which may include heavy menstrual bleeding, no menstrual bleeding (amenorrhea) or bleeding between periods (irregular menstrual bleeding), dysmenorrhea (painful menstrual periods), premenstrual syndrome (PMS), premenstrual dysphonic disorder (PMDD).<sup>[1]</sup> The polyherbal formulation *Raja Pravartini Churna* which is taken for our research, is mainly used to treat the menstrual abnormalities like Amenorrhea, Abnormal uterine bleeding due to ovulatory dysfunction, Premenstrual syndrome etc. the ingredients in this formulations are Dill (*Anthem graveolous*), Carrot (*Daucus carota*),

Devil Cotton (*Abroma augusta*), Baans Root (*Bambusa vulgavis*), Hirabol (*Commiphora myrrh*), Suhaga Pure (*Sodium tetraborate*), Green vitriol (*Ferrous sulphate*), Aluwa, Asafoetida (*Ferula foetida*). 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 *Raja Pravartini Churna*

The crude drugs used in preparation of *Raja Pravartini Churna* were collected from local Market of Dehradun in March 2018. 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 Characteristic:** The formulated powder was tested for organoleptic characteristic.

**Table 1: Organoleptic properties of *Raja Pravartini Churna***

S.No.	Parameter	Result standard	In House
1.	Appearance	Smooth	Smooth
2.	Color	Dark brown	Dark brown
3.	Odour	Characteristic	Characteristic

4.	Taste	Characteristic	Characteristic
5.	Texture	Powder	Powder

### Pharmacognostical Studies [2]

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

**Table 2: Extractive values of Raja Pravartini Churna**

S. No	Types of extractive value	Percentage yield (Marketed Prep.)	IN house
1.	Ethyl ether	0.7%	0.2%
2.	Chloroform	0.9%	0.1%
3.	Ethyl acetate	0.7%	0.2%
4.	Ethanol	0.6%	0.9%
5.	Water	0.1%	0.2%

**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.<sup>[3]</sup> (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.<sup>2</sup>the substance is to be dried to constant mass or for the prescribed time as specified. (Table 3)

**Table 3: Pre formulation studies of Raja Pravartini Churna**

S. No.	Parameters	Value STD	Value In house
1.	Bulk density gm/cm <sup>3</sup>	0.7792	0.3491
2.	Tapped density	1.091	0.5296
3.	Hausner's ratio	1.400	0.6595
4.	Carr's index	28.57	34.04
5.	Angle of repose	37.28	37.81
6.	Loss on drying	1.00%	1.38%
7.	Ash Value	0.02gm	0.10gm

**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 <sup>[4]</sup> (Table 4).

**Table 4: Florescence Analysis of Raja Pravartini Churna**

S.No	Sample	Visible light		Short UV 254 nm	
		In House	Market	In House	Market
1.	Drug	Brown	Brown	Brown	Brown
2.	Drug+ acetic acid	Cream	Cream	Reddish Brown	Dark Brown
3.	Drug+ FeCl <sub>3</sub>	Dark Brown	Dark Brown	Red	Dark Blue
4.	Drug+ HNO <sub>3</sub>	Pink	Orange	Dark Brown	Light Blue
5.	Drug+ Bromine	Yellow	Pink	Pink	Yellow
6.	Drug+ iodine	Yellow	Yellow	Orange	Yellow
7.	Drug+ H <sub>2</sub> SO <sub>4</sub>	Purple	Purple	Blue	Purple
8.	Drug+ KOH	Pink	Orange	Dark Brown	Orange
9.	Drug+ NaOH	Yellow	Cream	Cream	Cream

**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)

**Table 5: Phytochemical Screening of Raja Pravartini Churna (Inhouse & Market)**

S.No	Test	Chloroform		Ethyl acetate		Ethanol		Water	
		In House	Market	In House	Market	In House	Market	In House	Market
1	Carbohydrates	-	-	+	+	+	+	+	+
2	Alkaloids	-	-	++	++	+	+	-	-
3	Glycosides	-	-	+	+	++	++	+	+
4	Saponin	+	+	+	+	-	-	-	-
5	Flavonoids	-	-	-	-	+	+	-	-
6	Tannin	+	+	+	+	-	-	+	+
7	Amino acid & Proteins	-	-	+	+	-	-	-	-

**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)

**Table 6: Powder microscopy of Raja Pravartini Churna**

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

## RESULT AND DISCUSSION

In house formulation was prepared in accordance with the Ayurvedic Formulary of India. As part of standardization procedure, the finished product *Raja Pravartini 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 *Raja Pravartini 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 (105°C) 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)

## CONCLUSION

Ayurvedic medicine *Raja Pravartini 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.

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### Cite this article as:

Harsh Kumar Baranwal, Ashish Kumar, Kajal Ruhela, Pankaj Nainwal. Standardization of in House Prepared Polyherbal Formulation Raja Pravartini Churna. International Journal of Ayurveda and Pharma Research. 2018;6(5):68-71.

**Source of support: Nil, Conflict of interest: None Declared**

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