

Research Article



Standardization of Marketed Churna an Ayurvedic Polyherbal Formulation

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ABSTRACT

Standardization is the need of the hour in Ayurvedic system of medicine. The traditional systems of medicine are really effective but the problem with them is they lack in quality assurance. This enables us to recognise the quality of the formulation. The Central Council of Research in Ayurveda and Siddha has prescribed the preliminary guidelines for testing the quality of these formulations. It is essential to derive a protocol or develop methods for evaluation of herbal formulation to maintain uniformity between batches during production. The present work aims to standardize a polyherbal churna called Surya Sakthi Churna available in the market. The churna was procured and standardised for the parameters like organoleptic characters, physical characters, physicochemical properties and phytochemical screening etc. These parameters can determine the quality of the product. The results were found to be within the standards.

Keywords: Churna, polyherbal, ayurveda, standardisation, evaluation, medicine.

INTRODUCTION

Ayurvedic science has got its rich heritage in India. People in India believe that natural products are safe compared to synthetic drugs. The development in these traditional systems of medicine leads to maintain proper quality of the product. India is rich in its flora and fauna.¹

These plants are being used for curing many diseases as such in raw condition rather the being prepared as formulation; Standardisation is an essential parameter to be done. It is a vital step in formulation since it determines the quality of the product and is essential to develop a protocol on standardisation of every product available in the market to avoid variation arising between batch to batch.²

Plant materials are not like synthetic drugs, they vary in many conditions even in their chemical content depending on the time and season of collection of plant material, the geographical location of the plant being grown etc.³ The CCRAS and WHO has introduced certain standards and guidelines to maintain uniformity between the production batches. Good manufacturing practices and quality control of the ingredients and products can result in ensuring quality assurance of the formulation.⁴

The present study is to standardise a polyherbal formulation available in the market called as Surya Sakthi Churna used to treat many ailments of the body. The churna is evaluated for organoleptic properties, physical properties, physicochemical parameters and phytochemical screening to standardise the same.

MATERIALS AND METHODS

Surya Sakthi Churna was selected because it had

no previous specific scientific works been reported. So to prepare the standardisation procedures of the churna,^{5,6} the present work was attempted. Surya Sakthi Churna was procured from Vali Nilavarani Maiyam, Chennai.

Organoleptic Evaluation

The colour, odour and taste of the formulation were evaluated manually [Table: 1].

Table 1: Organoleptic Analysis

S.NO	Parameters	Observation
1.	Odour	Characteristic
2.	Taste	Characteristically Sweet
3.	Colour	Brown
4.	Texture	Fine

Physico Chemical Parameters

Loss on drying, ash values, extracting values, pH and crude fibre content⁷ was determined for the physicochemical parameters [Table: 2].

Table 2: Physicochemical Evaluation

S.NO	Parameters	Observation
1.	LOD (%)	3.7±0.14
2.	pH 1% & 10%/w/w	6.7±0.07 & 6.2±0.03 respectively
3.	Total ash value (%w/w)	16.9±0.16
4.	Acid insoluble ash value (%w/w)	3.7±0.09
5.	Water soluble ash value (%w/w)	13±0.21
6.	Crude fibre content (g)	8.91±0.05
7.	Alcohol soluble extractive value (%w/w)	2.78±0.23
8.	Water soluble extractive value (%w/w)	0.91±0.16



Loss on Drying

2g of the churna was accurately weighed and transferred into a preweighed watch glass.⁸ This was dried at 105°C for 5hrs with regular check of weight for every interval. The final loss in weight was calculated by

$$LOD(\%) = \frac{\text{initial} - \text{final}}{\text{initial}} * 100$$

pH

PH of the churna was determined using pH meter by dispersing 1% w/v and 10% w/v churna in water.

Crude Fibre Content

2g of the churna was added with 50ml of 10% nitric acid. This was boiled and filtered. The residue was washed with hot water and added with 50ml of 2.5% v/v sodium hydroxide solution. This was again filtered, washed with hot water and the residue was transferred into a crucible. The weight of the residue was taken for determining the crude fibre present in the churna.

Ash Value

Total Ash Value

The total ash content was determined by taking 2g of churna into a preweighed and tarred crucible and incinerated at a temperature not exceeding 450°C, cooled and weighed. The difference between initial and final gives the total ash value.⁹

Acid Insoluble Ash

The residue of ash obtained in total ash was added with 25ml of dilute HCl and boiled for 5mins. This was filtered using ashless filter paper and ignited again to determine the acid insoluble ash.

Water Soluble Ash Value

The residue of the total ash was added with 25ml of water in the place of dil.HCl and the procedure was followed the similar way.

Extractive Value¹⁰

Alcohol Soluble Extractive Value

5g of churna was added with 100ml of alcohol and kept for 24hrs, occasionally shaking and left aside after the first 6hrs. It was then filtered. The filtrate was evaporated until constant weight was obtained. The difference in weight gives alcohol soluble extractive value.

Water Soluble Extractive Value¹¹

5g of churna was added with 100ml of chloroform water and kept for 24hrs and the similar procedure was followed like alcohol soluble extractive value.

Physical characteristics of churna¹²

Bulk density, Angle of repose, Hausner's ratio, Carr's index, and particle size distribution was determined for

evaluating the physical characteristics of the churna [Table: 3].

Table 3: Physical evaluation

S.NO	Parameters	Observation
1.	Bulk density (g/ml)	0.478±0.013
2.	Tapped density (g/ml)	0.659±0.017
3.	Angle of Repose (θ°)	33°92'±0.11
4.	Compressability index (%)	27.46±0.024
5.	Hausner's ratio	1.37±0.012
6.	Particle size distribution (µm)	21.67±0.21

Bulk density

10g of churna was taken in a graduated measuring cylinder and tapped on a wooden surface. Bulk density is calculated by using the formula.

$$\text{Bulk density} = \frac{\text{weight taken}}{\text{bulk volume}}$$

$$\text{Tapped density} = \frac{\text{weight of churna taken}}{\text{volume (tapped)}}$$

Angle of Repose

Angle of repose was determined by using funnel method. The powder was allowed to flow through a funnel fixed on a stand to form a heap. The height and the radius gives the angle of repose.

Angle of repose

$$\tan \theta = \frac{h}{r}$$

$$\theta = \tan^{-1} (h/r).$$

Where, h = height of heap

r = radius of heap

Compressibility / Carr's Index

This is calculated using the formula:

$$\text{Carr's index} = \frac{\text{Bulk density (Tapped)} - \text{Bulk density (Untapped)}}{\text{Bulk density (Tapped)}} * 100$$

Hausner's Ratio

The formula used to determine Hausner's ratio is

$$\text{Hausner's ratio} = \frac{\text{Bulk density (Tapped)}}{\text{Bulk density (untapped)}}$$

Particle Size Distribution

This was done by sieve method. Sieves were arranged in an ascending order. Churna was weighed and added to the top sieve and the assembly was shaken for 15mins. Then the sieves were removed and the weight of churna retained over each sieve was measured.

Fluorescence Analysis

A little amount of churna was macerated with a small quantity of solvents like 1N Sulphuric acid, 1N Nitric acid, 1N Hydrochloric acid, Iodine, Potassium hydroxide,



Ammonia, 1N Sodium hydroxide for an hour and then filtered. The filtrate was then analysed under day light and UV light for colour and fluorescence.¹³ [Table: 4].

Table 4: Fluorescence Analysis

Solvent added	Colour Under	
	Day Light	UV Light
1N Sulphuric acid	Brown	Green
1N Nitric acid	Brown	Green
1N Hydrochloric acid	Brown	Green
Iodine	Greenish Brown	Green
Potassium hydroxide	Brown	Green
Ammonia	Brown	Green
1N Sodium hydroxide	Dark Brown	Green

RESULTS AND DISCUSSION

The churna was procured and was evaluated for its organoleptic, physical, physicochemical and fluorescence analysis. All the results obtained have been tabulated.

CONCLUSION

The churna was evaluated depending on various evaluation parameters and from the results obtained it was found to be within the standards. These preliminary tests can be prescribed as standards to fix the quality control test the churna and can be used in routine analysis of the same. The can also be used to perform quality control and quality assurance in the laboratory of pharmaceutical house.

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