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Research Article

QUALITY CONTROL STUDIES ON SHATAPATRAYADI CHURNA – AN ANTI-ULCERATIVE AYURVEDIC FORMULA

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ABSTRACT

As Ayurvedic and Siddha Preparations had thrown light around global market, many formulas are still untapped where standardization of those preparations makes it more valid for regulatory maintenance. In present study the anti-gastric formula of Ayurvedic text Shatapatrayadi churna available in market were compared with the churna prepared in-house lab for the standards. The microscopic feature of the ingredients used, fluorescence analysis, physicochemical constants and qualitative phytochemical screenings for the market and in-house preparation was studied. The ingredients were found authentic and the constants were equating almost with the in-house prepared churna as per API text.

Keywords: churna, gastritis, microscopy, fluorescence, physicochemical evaluation, mesh.

INTRODUCTION

Gastritis describes a group of conditions and commonly inflammation of the lining of the stomach. The inflammation of gastritis is most often the result of infection with the same bacterium that causes most stomach ulcers. Injury, regular use of certain pain relievers and drinking too much alcohol also can contribute to gastritis. Gastritis may occur suddenly (acute gastritis), or it can occur slowly over time (chronic gastritis). In some cases, gastritis can lead to ulcers and an increased risk of stomach cancer. For most people, however, gastritis isn't serious and improves quickly with treatment [1]. In Ayurveda, peptic ulcer mostly refers to Amlapitta or Parinamasula. Amlapitta is a disease of the gastrointestinal tract, especially of the stomach. It has not been described as an independent disease in major Ayurvedic texts, but has been mentioned in short in Kashyapa samhita [2]. Amlapitta literally means, pitta leading to sour taste.

The drug selected under the study is Shatapatrayadi churna contains Shatapatri, Amrita, Draksha and Yastimadhu which was prescribed for gastritis patients and also used in many formulations as base drug [3,4]. This Ayurvedic drug is brought from market and prepared the same in our laboratory as per text and subjected for macroscopic, microscopic authentication, fluorescence, physicochemical and phytochemical screening for validating the quality.

MATERIALS AND METHODS

Collection of materials

The market sample was procured from Ayurvedic medical shop, Nizamabad and the ingredients Shatapatri (Rosa centifolia), Amrita (Tinospora cordifolia), Draksha (Vitis vinifera), Yastimadhu (Glycyrrhiza glabra) were collected from different

parts of Telangana. All the ingredients are authenticated by Prof. Jayaraman, Director, PARC, Chennai.

Preparation of materials

The crude drugs procured were shade dried and made into fine powder separately with the help of mechanical grinder, sieved through 60# and mixed together mechanically to get a homogenous mixture, sieved again as per procedure and stored in air tight container [4].

Organoleptic evaluation

Various parameters such as colour, odour, touch and texture of both churnas were observed with comparison of the market drug and recorded.

Microscopic evaluation

The sample powders were dissolved in small amount of distilled water for a while and then mounted in glycerin. Microscopic examination was carried out with and without staining as per standard references [5,6,7,8]. The characters were observed compared to the prepared drug.

Fluorescence Analysis

The fluorescence analysis for the powder and treatment of powder with various solvents under UV light (254 nm) and (366 nm) were carried out[9].

Physico-chemical evaluation

In physic-chemical evaluation pH, moisture content, total ash, acid insoluble ash and water soluble extractive values and alcohol soluble extractive values were determined. The particle size of the powders was also checked using mechanical sieves[10,11].

Phytochemical analysis

The methonolic extract was prepared and tested [12] for the phytochemicals like terpenenoids, alkaloids, tannins, phenolic compounds, flavonoids, saponins, glycosides, carbohydrates, proteins and quinones for both churnas.

RESULTS AND DISCUSSION

Organoleptic evaluation

The market churna was slightly brighter colour than the in-house churna having aromatic odour of astringent taste with soft texture. (Table 1)

Microscopic characters

The diagnostic characters of microscopic analysis of shatapatrayadi churna showed the presence of unicellular hair, stalked capitate glandular hairs and spherical pollen grains of Shatapatri, bordered pitted vessels and simple and compound starch grains of Amrita, endosperm composed of angular parenchymatous cells containing oil globules and cluster crystals of calcium oxalate, measuring 13-16 µ of Draksha and parenchyma cells and prismatic cells which are characterteristic features of Yastimadhu. The results are tabulated as Table 2.

Fluorescence Analysis

The fluorescence analysis showed almost similar fluorescence for both churnas in daylight and UV light (254 nm & 366nm) for powder and treatment of powder with dilute alkalis, acids and organic solvents and presented in Table 3.

Physico-chemical evaluation

The extract obtained was 25.34% w/w and for the lab preparation was 26.20% w/w. The physicochemical parameters of both powders are tabulated. (Table 4)

Both the churnas have slightly acidic pH. Loss on drying at 110^0c is one of the major factors responsible for the deterioration of drug and formulations. Low moisture content is always desirable for higher stability of drugs. The results of loss on drying at 110^0c of churna showed the lower limits. A high ash value is indicated of contamination, substitution, adulteration or carelessness in preparing the formulation. However the results of ash value revealed that preparation as lower value than maintained in API. Water soluble and alcohol soluble extractive value plays an important role in evaluation of crude drugs. Less extractive value indicates addition of exhausted materials, adulteration or incorrect processing during drying or storage or formulating. The extractive values of preparation observed almost shows for its potentiality. The particle size percentage was more in the in-house churna as it was freshly prepared and may be of less moisture with less impurity and higher free flowing.

Phytochemical Screening

Preliminary qualitative analysis showed the presence of tannins, phenolic compounds, flavonoids, saponins, glycosides, quinones, carbohydrates and proteins in Table 4, indicating the active compounds were not

deteriorated during preparation and storage.

CONCLUSION

On the basis of the results obtained in the present study, the ingredients of market Shatapatrayadi churna and the prepared one are pure without adulterant and authentic material. Microscopic characteristics are in accordance with those given in Ayurvedic Pharmacopoeia of India and other various references. The fluorescence observed serve as diagnostic characters for the formulation. The observed values of physico chemical parameters such as pH, loss on drying, water soluble extractives, alcohol soluble extractives, total ash and particle size are within acceptable ranges. The phytochemicals present supports the churnas for its therapeutic efficacy. Further the churna should be studied for its chromatographic and pharmacological evaluation for the drug to be widely established.

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Table 1: Organoleptic characters

S. No.	PARAMETERS	RESULT	
		Market	In-house
1	Colour	Dark brown	Brown
2	Odour	Aromatic	Aromatic
3	Taste	Astringent	Astringent
4	Touch	Smooth nature	Smooth nature
5	Texture	Soft nature	Soft nature

Table 2: Microscopic features

S. No.	INGREDIENTS	SALIENT FEATURES
1.	Shatapatri	Unicellular hair, stalked capitate glandular hairs and spherical pollen grains
2.	Amrita	Bordered pitted vessels and simple and compound starch grains
3.	Draksha	Endosperm composed of angular parenchymatous cells containing oil globules and cluster crystals of calcium oxalate, measuring 13-16 µ
4.	Yastimadhu	Parenchyma cells and prismatic cells

Table 3: Fluorescence analysis

S. No.	TREATMENT	OBSERVATION					
		Market			In-house		
		Daylight	UV Light		Daylight	UV Light	
			254nm	366nm		254 nm	366 nm
1.	Drug Powder	Dark Brown	Yellow	Green	Brown	Yellow	Green
2.	Drug Powder + 1N Sodium Hydroxide (Aqueous)	Brown	Light Yellow	Green	Brown	Light Yellow	Light Green
3.	Drug Powder + 1N Sodium Hydroxide (Alcoholic)	Light Brown	Green	Light Yellow	Light Brown	Green	Light Yellow
4.	Drug Powder + 1N Hydrochloric Acid	Yellow	Light Yellow	Light Blue	Light Yellow	Light Yellow	Light Blue
5.	Drug Powder + 50% Sulphuric Acid	Dark Brown	Dark Brown	Blue	Dark Brown	Dark Brown	Blue
6.	Hexane extract	Brown	Yellow	Green	Brown	Yellow	Light Yellow
7.	Chloroform Extract	Brown	Yellow	Green	Brown	Yellow	Green
8.	Alcohol Extract	Light Brown	Light Green	Yellow Tint	Light Brown	Light Green	Colourless
9.	Acetone Extract	Yellow	Light Yellow	Colourless	Yellow	Light Yellow	Colourless
10.	Water Extract	Brown	Light Brown	Colourless	Brown	Light Brown	Colourless

Table 4: Physicochemical evaluation of churna

S. No.	PARAMETERS	RESULTS	
		Market	In-house
1.	pH	4.81	4.56
2.	Loss on drying	3.44%w/w	3.70%w/w
3.	Particle size		
	60 mesh	62.02%	61. 62%
	60-85 mesh	18.02%	18. 24%
	85-120 mesh	1.05%	1.12%
	Above mesh	3.81%	3.98%
4.	Water soluble extractive	25.18%w/w	27.21%w/w
5.	Alcohol soluble extractive	26.82%w/w	28.46%w/w
6.	Total ash	8.5%w/w	8.92%w/w

Table 5: Phytochemical analysis of methanolic extract of churna

S. No.	PHYTOCHEMICALS	RESULTS	
		Market	In-house
1.	Terpenoids	-	-
2.	Alkaloids	-	-
3.	Tannins	++	++
4.	Phenolic compounds	++	+++
5.	Flavonoids	+	++
6.	Glycosides	++	++
7.	Saponins	++	++
8.	Carbohydrates	++	++
9.	Proteins	++	++
10.	Quinones	++	++

++ = present in normal quantity
+++= present in more quantity
- = absent

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