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PIPPALI MODAKA : AN ANALYTICAL ASSAY

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Abstract :

Introduction- *Traditional medicine has a long history of serving people all over the world. Today the world is looking towards Ayurveda with great hope and faith. With these new challenges emerges in the form of queries of the modern man who would have a right to know about the drug he is consuming. To meet this new trust of inquisitiveness, standard of drugs of Indian System of Medicine is mandatory. In the process of assurance, to ascertain the prepared product is full proof and without any defects, these prepared products need to undergo several analytical parameters concerned to them and get clearance. This article is a step to standardized and validate an Ayurvedic formulation 'Pippali Modaka' through analytical scale.*

Material and methods- *The drug selected for the study is 'Pippali Modaka' which is mentioned by Sharangadhar in Sharangadhar Samhita Madhyama Khanda 7th chapter in 37-39 verse. The various parameter studies are organoleptic characters, physicochemical parameters of Vati like disintegration, friability, loss on drying, acid insoluble ash, water soluble ash etc. and microbial contamination.*

Results- *All the parameters studied are within the limits and hence validate the safely and effectively use of Vati.*

Conclusion- *Analytical study of a product provides standards to judge its quality. It is useful to decide future work plan and objective parameters to know the exact status of drug by conducting the comparative study of various samples during drug preparation.*

Key words: Analytical study, Pippali Modaka, Validation, standardization

INTRODUCTION :

The patients or consumers on one hand and the physician on the other are expecting three main factors to have in the materials that they are going to use viz. safety, quality and efficacy. All these three factors can be ascertained only by subjecting the prepared products to stringent quality measures. While discussing about

quality two terms relating to it are in practice i.e. quality control and quality assurance. The quality control is defined as the operational techniques and activities used to fulfill the requirements for quality, whereas the quality assurance is a complete system to assure the quality of the product. It is not only a process but a complete system including quality control so as to assure the consumer with quality products. In the process of quality assurance, to ascertain the prepared product is full proof and without any defects, these prepared products need to undergo several analytical parameters concerned to them and get clearance. Analytical study is the application of a process or a series of processes in order to identify and/or quantify a substance, the components of a solution or mixture, or determination of the structures of chemical compounds. For better utilization of Ayurvedic pharmaceutics, it is need of hour to analyze the drug through both classical and modern qualitative and quantitative parameters. Present paper is presented with an aim and objectives to develop analytical profile of *Pippali Modaka* by assessing it's various parameters like organoleptic as well as physico-chemical parameters including hardness, disintegration time, pH, loss on drying & ash values etc.

MATERIAL AND METHODS :

The sample subjected for analytical studies is - Pippali Modaka. The drug selected from ancient period belongs to *sharangadhar samhita madhyama khanda 7th chapter*. It has been named as PM. The basic ingredients of this vati are *Madhu, Ghrita, Pippali, Sarkara, Go-Dugdha, Twak, Ela, Patra, Nagakesara*.

Parameter Studied:

The Test parameters were taken according to "Protocol for Testing of Ayurvedic, Siddha and Unani medicines", Govt. of India, Dept. of AYUSH, Ministry of Health and Family Welfare, Pharmacopoeial Laboratory for Indian Medicines, Ghaziabad; Ayurvedic Pharmacopoeia of India, 2008, Dept. of AYUSH, Govt. of India, and "Laboratory Guide for the Analysis of Ayurvedic and Siddha Formulations", CCRAS, Dept. of AYUSH, Govt. of India, 2010.

The Following tests were performed at QUALITY CONTROL LABORATORIES ALN RAO MEMORIAL AYURVEDIC MEDICAL COLLEGE AND PG CENTRE KOPPA, DISTRICT: CHIKMAGALUR, KARNATAKA, 577126 .

The study has been carried out for the following parameters:-

A. Organoleptic characters :-

1. Colour
2. Odour
3. Taste
4. Appearance/Texture

B. Physico-chemical parameters :-

1. pH value
2. Loss on drying
3. Total ash
4. Acid Insoluble ash
5. Alcohol soluble extractive
6. Water soluble extractive

C. Pharmaceutical standardization of Vati :-

1. Hardness
2. Friability test
3. Disintegration Time(D.T.)

D. Phytochemical analysis of Vati :-

1. Carbohydrate
2. Protein
3. Alkaloid
4. Cardiac glycoside
5. Flavonoids
6. Tannins
7. Antraquinone glycoside
8. Triterpenoides

E. Thin Layer Chromatography :-

F. Test for microbialcontamination :-

1. Total bacterial count
2. Total fungal count

G. Fluorescent tests:

RESULTS :-

Table 1: Organoleptic Characters analysis of Pippali Modaka

Sl no.	Parameter	Result
1.	Colour	Ash Grey
2.	Odour	Characteristic
3.	Taste	Sweet, pungent, astringent
4.	Texture	Tablet

Table 2: Physico-Chemical Analysis Of Pippali Modaka.

Sl. No.	Parameter	Result
1.	Loss on Drying at 105°C	8.71 %
2.	Total ash	10.43%
3.	Acid insoluble ash	0.12%
4.	Water soluble ash	1.76%
5.	Alcohol soluble extractives	24.31%
6.	Water soluble extractives	39.23%
7.	pH (5% aqueous solution)	5.36 ± 0.10
8.	Total Sugar	81.40 %
9.	Reducing Sugar	7.24 %
10.	Non Reducing Sugar	74.16 %

Table 3: Pharmaceutical standardization of vati.

Sl No.	Parameter	Result
1.	Hardness	1 kg/cm3
2.	Friability Test Loss	0.856 %
3.	Disintigration time	240 seconds

Table 4: Phytochemical analysis of pippali modaka.

Sl. No.	Parameter	Result
1.	Carbohydrate	Present
2.	Protein	Present
3.	Alkaloid	Present
4.	Cardiac glycoside	Present
5.	Flavonoids	Present
6.	Tannins	Present
7.	Antraquinone glycoside	Present
8.	Triterpenoides	Present

Table 5: Thin layer chromatography

Solvent System:- Toluene: Ethyl acetate: 4 :1

Sl No.	Rf Values	Under Long UV
1.	0.06	Fluorescent green
2.	0.09	Fluorescent green
3.	0.44	Fluorescent blue
4.	0.55	Fluorescent blue
5.	0.64	Fluorescent blue

Table 6: Microbial contamination

Sl No.	Parameter	Result
1.	Total aerobic count	1.2 x 102 cfu
2.	Total fungal count	1.9 x 103 cfu

Table 7: Fluorescent tests: Pippali Modaka

SL NO		Under Visible Light	Under Long UV
1.	Sample + water	Ash Grey	Fluorescent yellow
2.	Sample + MeOH	Creamish White	Fluorescent Cream
3.	Sample + 10% NaOH	Creamish Orange	Fluorescent Cream
4.	Sample + 10% HCl	Light Cream	Fluorescent yellow
5.	Sample + 10% HNO3	Creamish White	Fluorescent yellow
6.	Sample +10% H2SO4	Creamish Yellow	Fluorescent Cream
7.	Sample + 10% NH3	Light Orange	Fluorescent yellow

DISCUSSION:

ORGANOLEPTIC CHARACTERS:-

Organoleptic characters of the samples are obtained by using sense organs, and are very useful parameters to determine and compare the quality of samples. It was carried out to assess the color, odour and taste of Pippali Modaka. Organoleptic features of Pippali Modaka were observed like Rough in texture, Ash grey in colour, characteristic in odour ; taste sweet, Pungent, astringent were found. All parameters found as per API standards.

PHYSICO- CHEMICAL PARAMETERS :-
Standardization of herbal products is the need of time because of several reasons. Physico- chemical Parameters of the Pippali Modaka like loss on drying, water soluble extract etc. were examined and parameters were compared with API. (Table 2)

The total ash is particularly important in the evaluation of purity of drugs, i.e. the presence or absence of foreign matter such as metallic salts or silica. Analytical results showed total Ash value for PM was 10.43%w/w. The water soluble extractive values indicate the presence of sugar, acids and inorganic compounds. Analytical results showed water soluble extractive value for PM was 39.23%w/w. The alcohol soluble extractive values indicated the presence of polar constituents like phenols, alkaloids, steroids, glycosides, flavonoids. The alcohol soluble extractive value In PM was 24.31%w/w, which signifies the

superiority of PM which was prepared by using traditional method of preparation. Deterioration time of the plant material depends upon the amount of water present in plant material. If the water content is high, the plant can be easily deteriorated due to fungal attack. The loss on drying at 105°C was 8.71%w/w.

PHYTOCHEMICAL ANALYSES :
Phytochemical parameter suggest presence of Flavonoids, Tannins, Alkaloids, Carbohydrate, Protein etc.(Table 4). Also suggest Authenticated drug are used for preparation of drug.

CONCLUSION:

Pippali Modaka is a potent medicine in the management of disease Pandu. Firstly the morphological features, organoleptic characters and powder microscopy of the individual drugs authorize the genuinity and no contaminants found. It is inferred that the formulation meets minimum qualitative standards as prescribed by API at preliminary level. Phyto-chemical analysis had assessed but still need validation through repeated experiment on different batches with quantity of ingredients. These basis stipulations for the standardization of PM are covered in the current study, additional important analysis and investigations are required. The results of this study may be used as the reference standard in further research undertakings of its kind.