Research Paper Medical Sciences

Study of Standard Operating Procedure of Sitopaladi Churna And Its Physico Chemical Analysis

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ABSTRACT

Churnas an Ayurvedic dosage form contains an herbal powder which is complex mixtures of different ingredients; each ingredient has variable in activity, concentration of phytochemicals, consistency, stability and shelf life as per particle size. Sitopaladi Churna is one of widely using compound formulation indicated in respiratory disorders for all ages. To observe the effect of particle size in Sitopaladi Churna a study was conducted. Here Sitopaladi Churna was prepared by using different mesh size (80,120 & 150) and remarkable changes were observed in morphological parameters. Then present study has planned to check particle size effect after using different mesh size (80,120, & 150) in different analytical parameters used to analysis Sitopaladi churna. In this study we done physico chemical analysis and phyto chemical study of raw drugs and also finished product.

KEYWORDS Sitopaladi churna, Analysis, Raw drugs

Introduction:
Churna Kalpana (herbal powder) is one of the important solid dosages of Bhaishajya kalpana. Herbal powders are prepared by using single plants or mixture of specified different powders. Sitopaladi Churna is one of such compound powder indicated mainly in respiratory disorders at all ages. Herbal powders are complex compounds of various components in which all components has different activity, concentration and consistency etc. In classics powders are manufactured by pounding and triturating completely dried herbals and filtered through cloth. In this the powder which will obtain may vary in particle size and which one is effective is difficulty to predict clinically. Here and attempt was made to prepare Sitopaladi Churna in three different particle size and its quality control analysis.[1]

Objective
1. To study of standard operating procedure of Sitopaladi churna and also its physico chemical analysis

Standard Operative Procedure
Ingredients

1.Sitopala	(Sugar candy)	: 16 parts
2.Vamsalochana	(Bambusa manna Wild)	: 8 parts
3.Pippali	(Piper longum Linn.)	: 4 parts
4.Sukshmaila	(Elettaria cardamomum Maton.)	: 2 parts
5.Twak	(Cinnamomum zeylanicum Breyn)	: 1part

Method adopted: Trituration and filtration

Procedure:
All ingredients were taken as per specified quantity in a stony mortar and triturated till powder forms. Powder was filtered through 80 number meshes and stored separately. All individual powders were taken as per specified quantity in a porcelain mortar and triturated till homogenous powder forms. Prepared Sitopaladi Churna will be packed in plastic containers and used for analysis.[2]

Observation of sitopala during preparation: The duration required for Pounding and trituration is: approximately 10-20 minutes.

The duration required for filtration is: 15-20 minutes.

■ **Precaution:**
Weighing machine should be calibrated before using.

Stony Mortar should be cleaned before pounding.

Sieve should be cleaned properly before using.

Pounding should be slowly to control heat generation.

■ **Results of weight**
Initial weight: 100 gm
Final weight: 96gm
Loss/gain: 04gm

Observations of vamsalochan powder:
The duration required for filtration is: approximately 10-15 minutes.

■ **Precaution**
Stony Mortar should be cleaned before pounding.
Sieve should be cleaned properly before using.
Weighing machine should be calibrated before using.
Filtration for slowly to avoid loss.

■ **Results of weight**
Initial weight: 100 gm
Final weight: 97gm
Loss/gain: 03gm

Observation of pippali powder:
The duration required for Pounding and trituration is: 30-40 minutes.

The duration required for filtration is: 20-30 minutes.

■ **Precaution Stony Mortar should be cleaned before pounding. Sieve should be cleaned properly before using.**
Weighing machine should be calibrated before using.

Pounding and filtering should be carefully.

■ **Results of weight**
Initial weight: 100 gm
Final weight: 92gm
Loss/gain: 08gm

Observation of Ela seed powder:
The duration required for Pounding and trituration is: 20-30 minutes.

The duration required for filtration is: 25-30 minutes.

■ **Precaution**
Stony Mortar should be cleaned before pounding.
Sieve should be cleaned properly before using.
Weighing machine should be calibrated before using.
Pounding and filtering should be carefully.

■ **Results of weight**
Initial weight: 100 gm
Final weight: 090 gm
Loss/gain: 010 gm

Observation of Twak powder:
The duration required for Pounding and trituration is: 30-40 minutes.

The duration required for filtration is: 25-30 minutes.

■ **Precaution:**
Stony Mortar should be cleaned before pounding.
Sieve should be cleaned properly before using.
Weighing machine should be calibrated before using.
Pounding and filtering should be carefully
■ **Results of weight:**
Initial weight: 100 gm
Final weight: 91 gm
Loss/gain: 09 gm

■ **Equipments:**
Weighing machine(digital): (300g capacity) 01
Porcelain mortar: 1ltr 01
Stainless steel Spoon (6 inch length): 01
Air tight bottle(100 gm capacity): 01

- **Principle: Mixing**
- **Method:**

All powders are taken as per specified quantity in a porcelain mortar and triturated to till homogenously mixture. After triturating and mixing powder will be passed through 80 mesh sieve number. White greyish coloured powder obtained and stored in air tight container.

- **Observation:**

Appearance : fine powder
Odour : Characteristic
Taste : Astringent with light sweetish
Colour: whitish grey

- **Precaution:**

Porcelain Mortar should be cleaned before pounding.

Weighing machine should be calibrated before using.

Stainless steel spoon (size no.06) should be cleaned before using Air tight container should be sterilised before using.

Mixing done carefully

Before packing bottles should be sterilised

- **Results of weight**

Initial weight: 1240 gm
Final weight: 1200 gm
Loss/gain: 40 gm

Physico chemical analysis of raw drugs:
Raw drug analysis:

- Authentication and identification of individual raw drugs done by Central research facility in shri B.M.K.AMV Belgaum.

- Macroscopic study for individual drugs:

Table No.1: Physico chemical analysis of raw drugs

Ingredient		Appearance	Colour	Odour	Taste
Sitopala	Before	Crystalline form	White crystal form	Characteristic	Sweet
	After	Fine, powder	White	Characteristic	Sweet
Vamsalochana	Before	Powder	White	Odourless	Testless
	After	Fine powder	White	Odourless	Testless
Pippali	Before	Solid fleshy spike	Blackish green	Aromatic	Pungent
	After	Greenish fine powder	Greenish	Aromatic	Pungent
Ela	Before	Rounded base and slightly pointed beak	Light blackish Seeds – reddish brown	Strongly Aromatic	Characteristic
	After	Grayish fine powder	Grayish pale	Strongly Aromatic	Characteristic
Twak	Before	1.Outer surface: single, double or closely packed compound quills 2.Inner surface: faint straight striations	Yellowish brown Dark brown	Fragrant	Astringent
	After	Brownish fine powder	Brownish	Fragrant	Astringent

Table No. 2: RESULTS OF PHYSICO CHEMICAL PARAMETERS:

Name Of The Drugs	Total Ash(API)	Obtained Result	A.I.A. (API)	Result	A.S.E.(API)	Result	W S E (API)	Result	LOD	P_H Value
Sita/ Khan dasharkara	NMT %	16%	NMT%	10%	NMT %		NMT %		0.54	
Vamshalochana	NMT %	85%	NMT%	62%	NMT %		NMT %		0.06	7.04
Pippali	NMT 7%	6.21%	NMT 0.5%	0.42%	NLT 5%	6.83%	NLT 7%	11.2%	0.12	6.75
Ela	NMT 4%	5.31%	NMT 2%	1.41%	NLT 4%	6.46%	NLT 10%	11.2%	0.26	6.45
Twak	NMT 3%	2.14%	NMT 2%	1.63%	NLT 2%	2.49%	NLT3%	3.28%	0.58	5.79

Table No.3: Preliminary phytochemical Analysis of individual raw drugs

RESULT OF CHEMICAL CONSTITUENTS Preliminary Phytochemical Screening						
Component	Pippali		Ela		Twak	
	A	W	A	W	A	W
Carbohydrates	-ve	-ve	+ve	+ve	-ve	-ve
Reducing sugar	+ve	+ve	+ve	+ve	+ve	+ve
Monosaccharides	-ve	-ve	-ve	-ve	+ve	+ve
Pentose sugar	+ve	+ve	-ve	-ve	+ve	+ve
Hexose sugar	+ve	+ve	-ve	-ve	-ve	-ve
Proteins	+ve	+ve	-ve	-ve	+ve	+ve
Amino acids	-ve	-ve	+ve	+ve	+ve	+ve
Starch (Non reducing polysaccharides)	+ve	+ve	-ve	-ve	-ve	-ve
Steroid	+ve	+ve	-ve	-ve	+ve	+ve
Cardiac glycosides	-ve	-ve	-ve	-ve	-ve	-ve
Saponin glycosides	-ve	-ve	+ve	+ve	+ve	+ve
Flavonoids	-ve	-ve	-ve	-ve	-ve	-ve
Alkaloids	-ve	-ve	+ve	+ve	+ve	+ve
Tannins and phenolic compounds	-ve	-ve	-ve	-ve	-ve	-ve
Non reducing sugar	-ve	-ve	-ve	-ve	-ve	-ve
Qualitative Analysis for Inorganic Elements						
Calcium	-ve	-ve	+ve	+ve	+ve	+ve
Magnesium	+ve	+ve	+ve	+ve	+ve	+ve
Sodium	+ve	+ve	+ve	+ve	+ve	+ve
Potassium	+ve	+ve	+ve	+ve	+ve	+ve
Iron	-ve	-ve	-ve	-ve	-ve	-ve
Sulphate	+ve	+ve	+ve	+ve	+ve	+ve
Chloride	+ve	+ve	+ve	+ve	+ve	+ve
Carbonate	-ve	-ve	+ve	+ve	-ve	-ve
Phosphate	-ve	-ve	-ve	-ve	+ve	+ve
Nitrates	-ve	-ve	-ve	-ve	+ve	+ve

Particle size:
Particle size is to be done with ziess software digital microscope for all individual raw drugs but khandasharkara and vamshalochana is not capable to see particles size in microscopic study.

Result of raw drugs:
Pippali:
1.753µm + 1.013µm + 1.732µm + 0.970µm + 1.196µm + 1.238µm + 1.817µm = 9.719µm

9.719µm/ 7 = 1.3884µm

The final Pippali powder Average particle size is 1.3884µm

Ela:
1.936µm + 1.150µm + 0.738µm + 1.531µm + 1.247µm = 6.602µm

6.602µm/ 5 = 1.3204µm

The final Ela seed powder Average particle size is 1.3204µm

Twak:
0.922µm + 1.098µm + 1.313µm + 0.799µm + 0.724µm + 0.915µm = 5.771µm

5.771µm / 6 = 0.9618µm

The final Twak powder Average particle size is 0.9618µm

Physico chemical analysis of finished product:
Finished product analysis: is done in Central research facility in Shri BMKAMV Belgaum

Results are obtained finished product:
Macroscopic study for Sitopaladi churna (Mesh Size 80).

Table No.4: Physico-chemical analysis for sitopaladi churna (Mesh size 80)

Physico chemical studies	
Tests	Results
Loss on drying	0.01%
Ash Value	5.59%
Acid soluble Ash	0.57%
Water soluble extractive	24.56%
Alcohol soluble extractive	28.87%

Preliminary Phytochemical Screening:
Particle size:
Particle size is done with ziess software digital microscope for finished product Sitopaladi churna (Mesh Size 80).

Result of Sitopaladi churna (Mesh Size 80) is

2.720µm+2.335

µm+2.859+3.323+2.129+2.557+3.050+2.738+2.050+2.885+2.132+2.966+2.283+2.189+2.659+1.509+2.378+2.982+2.151+3.897+2.718+3.823+2.747+3.908= 64.988

Mean = $\sum x/n$ = 64.988/24
= 2.707
Sitopaladi churna (Mesh size 80) is average Particle size is 2.707µm.

Table No.5: Fluroscence Analysis Sitopaladi churna

Solutions	Visible light	S.W.	L.W
Plain powder	Greyish	Dark greyish	Black
1N NaOH	Brown	Greenish	Black
Picric acid	Yellowish	Greenish	Black
Acetic acid	Yellowish brown	Greenish yellow	Greenish
1N HCl	Brown	Greenish	Black
1N HNO_3	Greenish brown	Greenish	Yellowish
Iodine 5%	Greenish yellow	Greenish	Black
5% $Fecl_3$	Greenish yellow	Greenish	Black
50% HNO_3	Greenish yellow	Greenish	Black
Methanol	Brown	Dark brown	Black
Methanol+ NaOH	Brown	Dark brown	Black

Table No.6: Pharmaceutic study Sitopaladi churna

Bulk density	0.59
True density	0.57
Angle of repose	47.98
Flow rate	Poor

Table 7: Instruments study Sitopaladi churna

	S.W.	L.W.
TLC	0.35, 0.43, 0.50, 0.94	0.36, 0.86,0.97

Discussion and Conclusion:

The present work was carried out for the formulation and standardization of sitopaladi churna and raw drugs of it. The various physico-chemical parameters was studied which was helpful for detection of raw drug as well as original formulation of sitopaladi churna. Further on the basis of physico-chemical analysis study will take for clinical analysis.

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