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STANDARDIZATION OF HERBAL FORMULATION (*HINGWASHTAK CHURNA*)

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ABSTRACT

Standardization of herbal formulation is important so as to assess the standard, purity, safety and efficacy of the drugs. Most of the normal system of drugs is effective but they lack of standardization. So there's a requirement to develop a standardization technique. During this research is an effort to guage "*Hingwashtak churna*" an Ayurvedic formulation for its internal control parameters. In house *Hingwashtak churna* preparation was evaluated by performing Organoleptic evaluation, Physicochemical evaluation, Physical characteristics and Phytochemical screening. it had been observed that the set parameters were wont to standardize the "*Hingwashtak churna*" these findings are going to be help towards establishing pharmacopoeia standards for crude drugs also as for formulation which are gaining relevance in research on traditional medicinal system.

KEYWORDS

Standardization, Physicochemical Parameters, *Hingwashtak churna*.

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INTRODUCTON

Ayurvedic medicines are manufactured under different pharmaceutical process to result in various dosages forms like extract, tincture, decoction, Pills, Powder, Tablets, capsules etc. The standardization protocols to work out the share of active medicament couldn't be followed for Ayurvedic herbal preparations. The procedure need to be modified so as to form the preparation safe¹. The planet Health Organization (WHO) also estimated that about 80% of the population in developing countries rely almost exclusively on traditional medicine for his or her primary health care needs. Ayurveda covers most of the community care in India. It's preventive also as a curative system of drugs. ²The *Hingwashtak Churna* is one among the classical Ayurvedic dosage form utilized in

Ayurvedic system of drugs. It's official in Ayurvedic Pharmacopoeia of India is combination of seven reputed herbs and one salt, comprised of the fruits of long pepper (Pippali), fruits of pepper (Marica) and rhizomes of *Zingiber officianalis* (Saunthi), fruit of *Trachyspermum ammi* (Ajmoda), *Saindhava Lavana*, fruits of cumin (*Shweta Jiraka*), fruits of caraway (*Krishna Jiraka*), Exudate of *Ferula foetida* (Hing). It's used as Digestive impairment, Colicky pain and Abdominal pain³. The formulation was stored in well closed airtight container in dry and funky place. Organoleptic, Physical characteristics, Physicochemical evaluation and Phytochemical screening studies haven't been reported for the formulations. With this aim the present project was designed to organize and standardized the *Hingwashtak churna* in accordance with the WHO guidelines.

MATERIAL AND METHODS

1. Collection of crude drugs

The crude drugs used in preparation of *Hingwashtak churna* were collected from local Market of Gorakhpur in July 2019. Ingredients were identified on the basis of morphological and microscopic characters.

2. Preparation of *Hingwashtak Churna*

Hingwashtak Churna was prepared in house using method described in Ayurvedic Pharmacopoeia. Take all the ingredient like *Pippali*, *Marica*, *Saunthi*, *Ajmoda*, *shweta jiraka*, *Krishna jiraka*, *Hing*, *Saindhava lavana* and Power all ingredient separately and passed through sieve no.80. Weight each ingredients 5 gm separately, mixed together to obtain a homogeneous blend and packed in a well closed container to protect them from moisture. The In house preparation was named as HC^{3,4}.

3. Evaluation of *Hingvastaka churna*

3.1. Organoleptic evaluation

Organoleptic evaluation refers to evaluation of formulation by appearance, colour, odour, taste, etc. The organoleptic characters of the preparations were administered⁵.

3.2. Physico-Chemical Evaluation

A. Loss on drying:

Loss on drying is that the loss of mass expressed as percent w/w. About 10g of drug samples of each formulation were weighed accurately and dried

during a tarred evaporating dish at 105°C for five hrs. Percent w/w was calculated with reference to initial weight⁴.

B. Determination of Total Ash

2 gm of churna was weighed accurately during a previously ignited and tarred silica crucible. The material was then ignited by gradually increasing the heat to 500-600°C until it appeared white indicating absence of carbon. It's then cooled during a dessicator and total ash in mg per gm of air dried material is calculated⁴.

C. Acid Insoluble Ash Value

To the crucible containing the whole ash, add 25 ml of acid, cover with a watch-glass and boil gently for five minutes. Rinse the watch-glass with 5 ml of predicament and add this liquid to the crucible. Collect the insoluble matter on an ashless filter-paper and wash with predicament until the filtrate is neutral. Transfer the filter-paper containing the insoluble interest the primary crucible, dry on a hot-plate and ignite to constant weight. Allow the residue to relax during an appropriate desiccator for half-hour, then weigh directly. Calculate the content of acid-insoluble ash in mg per g of air-dried material⁷.

D. Water Soluble Ash Value

To the crucible containing the whole ash, add 25 ml of water and boil for five minutes. Collect the insoluble matter during a sintered-glass crucible or on an ashless filter-paper. Wash with predicament and ignite during a crucible for quarter-hour at a temperature not exceeding 450°C. Subtract the load of this residue in mg from the load of total ash. Calculate the content of water-soluble ash in mg per g of air-dried material.

E. Determination of water soluble extractive

5gms of *Hingwashtak Churna* was accurately weighed and placed inside a glass stoppered conical flask. It's then macerated with 100ml of water for 18 hours. It had been then filtered and about 25ml of filtrate was transferred into a china dish and was evaporated to dryness on a water bath. It had been then dried to 105°C for 6 hours, cooled and eventually weighed and water soluble extractive value was calculated⁶.

F. Determination of alcohol soluble extractive

5gms of each *Hingwashtak Churna* was accurately weighed and placed inside a glass stoppered conical

flask. It had been then macerated with 100ml of ethanol 18 hours. It had been then filtered and about 25ml of filtrate was transferred into a china dish and was evaporated to dryness on a water bath. It had been then dried to 105°C for 6 hours, cooled and eventually weighed and calculated¹⁰.

G. Determination of pH:

1% w/v and 10% w/v solutions of samples were prepared in water and pH decided using Digital pH Meter.

3.3. Determination of Physical Characteristics

A. Bulk Density

Bulk density is that the ratio of given mass of powder and its bulk volume. It's determined by transferring an accurately weighed amount of powder sample to the graduate with the assistance of a funnel. The initial volume was noted as untapped or poured volume. The ratio of weight of the number it occupied was calculated^{8,9}.

Bulk Density = (W/V0) gm/ml

Where,

W = mass of the powder

V0 = untapped volume

B. Tapped Density

It is measured by transferring a known quantity (25 gm) of powder into a graduated cylinder and tapping it for a specific number of times. The initial volume was noted. The graduated cylinder was tapped continuously for a period of 10-15 min. The density can be determined as the ratio of mass of the powder to the tapped volume.

Tapped Volume = (W/Vf) gm/ml

Where,

W = mass of the powder

Vf = tapped volume.

C. Angle of Repose

Angle of Repose has been used as indirect methods of quantifying powder flow ability due to its relationship with inter particle cohesion. The internal angle between the surface of the pile of powder and therefore the level is understood because the angle of repose. The powder is skilled funnel fixed to a burette at a height of 4 cm. A paper is placed below the funnel on the table. The height and the radius of the pile were measured. Angle of repose of the powder was calculated using the formula¹⁰.

Angle of Repose = $\tan^{-1}(h/r)$

Where,

h=height of the pile

r = radius of the pile

D. Hausner Ratio

It is related to inter particle friction and as such can be used to predict the powder flow properties. Powders with low interparticle friction like coarse spheres have a ratio of roughly 1.2, whereas more cohesive, less flowable powders like flakes have a Hausner ratio greater than 1.6.

Hausner ratio is = D_f / D_o ,

Where D_f = Tapped density and

D_o = Bulk density.

E. Carr's Index

Another indirect method of measuring the powder flow from bulk density is Carr's index^{9,10}.

Carr's index = % compressibility = $(D_f - D_o / D_o) \times 100$

Where D_f = Tapped density and

D_o = Bulk density.

3.4. Preliminary phytochemical screening

In house formulation of *Hingwashtak Churna* were subjected to test separately for the presence of various phytoconstituents like saponins, tannins, carbohydrates, alkaloids, flavonoids, glycosides, steroids, proteins and alkaloids.

RESULTS AND DISCUSSION

In house formulation was prepared in accordance with the Ayurvedic Pharmacopoeia of India. As part of standardization procedure, the finished product *Hingwashtak churna* was tested for relevant organoleptic, physico-chemical, Physical characteristics and preliminary photochemical screening evaluation.

Organoleptic Evaluation

The colour, odour, taste and appearance of the formulation were evaluated manually and given in Table No.1.

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Physicochemical Evaluation

Quality tests for *Hingwashtak churna* were performed for LOD, pH, ash content, water soluble extractive, methanol soluble extractive, acid insoluble ash and water soluble ash were found to be within standard ranges. Various physicochemical parameters of churna is given in Table No.2.

Physical characterization

The result of Physical Parameter of *Hingwashtak churna* was tabulated in Table No.3.

Preliminary phytochemical Screening:

The alcoholic extract of *Hingwashtak Churna* and individual ingredients were studied for the presence of various phytoconstituents. The preliminary phytochemical observations of *Hingwashtak churna* was tabulated in Table No.4.

Table No.1: Organoleptic description of *Hingwashtak churna*

S.No	Parameters	Observation
1	Colour	Brown
2	Odour	Characteristic
3	Taste	Bitter
4	Appearance	Fine

Table No.2: Physicochemical Descriptions of *Hingwashtak churna*

S.No	Parameters	Observation
1	LOD (%)	1.83
2	pH 1% & 10%w/w	6.1 and 5.7
3	Total ash value (%w/w)	7.53
4	Acid insoluble ash value (%w/w)	3.11
5	Water soluble ash value (%w/w)	4.33
6	Water soluble extractive value (%w/w)	9.31
7	Alcohol soluble extractive value (%w/w)	6.55

Table No.3: Physical Characters of *Hingwashtak churna*

S.No	Parameters	Observation
1	Bulk Density(g/ml)	0.601
2	Tapped Density	0.73
3	Angle of Repose	R= 2.9cm H= 3.1cm
4	Hausner Ratio	1.177
5	Carr's Index (%)	15.631

Table No.4: Preliminary Phytochemical Screening

S.No	Phytoconstituents	Ethanollic extract
1	Alkaloids	+
2	Tannins	+
3	Glycosides	+
4	Flavonoids	+
5	Saponin	+
6	Steroids	+

CONCLUSION

The churna was evaluated counting on various evaluation parameters and from the results obtained it had been found to be within the standards. These preliminary tests are often prescribed as standards to repair the standard control test the churna and may be utilized in routine analysis of an equivalent. They also can be wont to perform internal control and quality assurance within the laboratory of pharmaceutical house.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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