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Research Article

**PHARMACOGNOSTIC EVALUATION OF POLYHERBAL
FORMULATION: DADIMASHTAKA CHURNA**

N. Singh* and M. Pande

NIMS Institute of Pharmacy, NIMS University, Jaipur, Rajasthan, India.

Abstract:

There has been an increase in demand for the Phyto-pharmaceutical products of Ayurveda so a pharmaceutical preparation in the form of Dadimashtaka Churna is tried to standardize, till date there is no reference regarding evaluation of Dadimashtaka Churna. Dadimashtaka Churna, a polyherbal Ayurvedic formulation is recommended in the management of gastro intestinal complaints like diarrhea. In the present study, Dadimashtaka Churna is subjected to confirm its quality and purity through Pharmacognostic and Phytochemical evaluation. Pharmacognostic results revealed the presence of specific character of individual drugs i.e. Calcium oxalate crystal and tanniferous vessel of *Punica grantum*, Siliceous crystals of *Bambusa arundinacea*, oil globules, epicarp and parenchyma cells with black debris of *Piper nigrum*, spongy parenchyma of *Cinnamomum tamala*, parenchyma with secretion cell of *Zingerabine officinale*, tannin content of *Piper longum*, sclerenchyma and endosperm of *Cuminum cyminum*, striated cuticle of *Trachyspermum ammi*, endosperm of *Coriandrum sativum* and pollen grain of *Mesua ferrea*. The preliminary phytochemical evaluation revealed the presence of carbohydrate, terpenoids, flavonoids and tannins. Pharmacognostical and phyto-chemical evaluation of Dadimashtaka churna illustrated the specific characters of all ingredients which were used in the preparation. The pharmacognostical and phyto-chemical analysis of Dadimashtaka churna provides substantial information for the proper identification, authentication, and scientific evaluation of the final product/drug.

Keywords: *Dadimashtaka Churna, Tanniferous vessel, Siliceous crystals, Epicarp, Endosperm***Corresponding author:****Nitu Singh,**

NIMS Institute of Pharmacy,

NIMS University, Jaipur, Rajasthan, India.

E-mail – nanhushagun@gmail.com

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INTRODUCTION:

India having a rich heritage of traditional medicine constituting with its different components like *Ayurveda*, *Siddha* and *Unani*. The development of these traditional systems of medicines with the perspectives of safety, efficacy, and quality will help not only to preserve the traditional heritage but also to rationalize the use of natural products in healthcare. Standardization of herbal formulations is an essential factor in order to assess the quality, purity, safety and efficacy of drugs based on the concentration of their active principles [1,2]. Unfortunately, standardization and quality control have remained grey areas in the preparation of Ayurvedic medicines. Till date, most of the ayurvedic formulations are lacking in their defined quality control parameters and method of its evaluation [3]. It is very important to establish a system of standardization for every plant medicine in the market, since the scope for variation in different batches of medicine is enormous. Plant material when used in bulk quantity may vary in its chemical content and therefore, in its therapeutic effect according to different batches of collection e.g. collection in different seasons and/or collection from sites with different environmental surroundings or geographical locations. The increasing demand of the population and the chronic shortage of authentic raw

materials have made it incumbent, so there should be some sort of uniformity in the manufacture of herbal or Ayurvedic medicines so as to ensure quality control and quality assurance. With the growing need for a safer drug, attention has been drawn to the quality, efficacy, and standard of Ayurvedic formulations [4].

The present study is an attempt to standardise a polyherbal formulation available in the market named Dadimashtaka Churna which is used to treat gastro intestinal complaints like diarrhea. It consists of fourteen ingredients. The main ingredient of Dadimashtaka churna is Pomegranate (Dadima) [5]. The churna is evaluated for organoleptic properties, Microscopical properties and preliminary phytochemical screening to standardise the same.

MATERIALS AND METHODS:**Plant Materials**

All the crude drugs of Dadimashtaka churna were procured from local market of Jaipur, Rajasthan and were authenticated by department of Botany, University of Rajasthan, Jaipur, India. Voucher specimens of these ingredients have been deposited in the department of Botany, University of Rajasthan, Jaipur, India for future reference. The lists of crude drugs are given in Table 1.

Table 1: The composition of Dadimashtaka churna.

S.no	Ingredients	Amount in gram
1.	<i>Punica grantum</i>	160
2	<i>Bambusa arundinacea</i>	5
3	<i>Cinnamomum zeylanicum</i>	10
4	<i>Cinnamomum tamala</i>	10
5	<i>Elettaria cardamomum</i>	10
6	<i>Mesua ferrea</i>	10
7	<i>Trachyspermum ammi</i>	20
8	<i>Coriandrum sativum</i>	20
9	<i>Cuminum cyminum</i>	20
10	<i>Piper longum</i>	20
11	<i>Piper longum root</i>	20
12	<i>Zingiber officinale</i>	20
13	<i>Black pepper</i>	20
14	Sugar	20

Preparation of Dadimashtaka Churna

The ingredients were individually pulverized and sieved (80 mesh) to obtain respective fine powders. Powder of each ingredient was weighed separately and thoroughly mixed together as per the quantity mentioned in . The composite mixture was again sieved (80 mesh) to obtain a fine powder of the finished product. The finished product thus obtained in powder form was packed in sterilized polythene pouches, labelled, and stored inside cool and dry place [5].

Pharmacognostic Evaluation

Organoleptic evaluation

Organoleptic evaluation was carried out to assess the color, odor and taste of the Churna .The results are given in Table 2.

Powder microscopy

The churna was reduced to fine powder. Five mg of fine churna was taken and washed with plain water It was taken in test tube and boiled with the few ml of chloral hydrate solution. Then the samples were treated separately with iodine, chloral hydrate, pholorglucinol or potassium iodide; a drop of glycerine was added and mounted [6,7,8].

Preliminary Phytochemical tests [9,10,11]

Qualitative chemical tests were conducted for Dadimashtaka churna to identify the various phytoconstituents. The various tests conducted are given below and observations are recorded and tabulated in Table 3.

1. Test for carbohydrates

Churna was warmed with Fehling's solution A and B. Red color indicates the presence of carbohydrate

2. Test for alkaloids

A few drops of acetic acid were added to the test substance. Dragendorff's reagent was added to the above mixture and shaken well. Formation of an orange red precipitate indicates the presence of

alkaloids.The sample was added to dilute Hydrochloric acid and Mayers reagent.White precipitate indicates presence of alkaloids.

3. Test for glycosides

Churna was added with little amount of anthrone and one drop of concentrated sulphuric acid was added and made into a paste, gently warmed on a water bath. The appearance of dark green color indicates the presence of glycosides.

4. Test for terpenoids:

2 ml of the ethanolic extract was dissolved in 2ml of CHCl₃ and evaporated to dryness. 2ml of conc. H₂SO₄ was then added and heated for about 2 minutes. Development of a grayish color indicates the presence of terpenoids

5. Test for flavonoids: Shinoda's test

To the churna in alcohol a few magnesium turnings and concentrated Hydrochloric acid were added and boiled. Red coloration indicates presence of flavonoids.

6. Test for tannins

Churna was mixed with lead acetate solution forms a white precipitate indicates the presence of tannins.

7.Test for steroids: Liebermann–Burchard test

Churna was dissolved in chloroform and added with 3ml of acetic anhydride; 3ml of glacial acetic acid were warmed and cooled. To this a few drops of concentrated sulfuric acid were added along the sides of the tube. Presence of steroids is indicated by bluish green color.

RESULTS AND DISCUSSION:

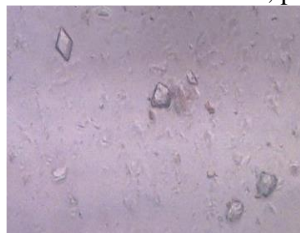
The organoleptic characters of Ayurvedic drugs are evaluating the qualities of preparation by color, touch, taste, odor, etc. were noted through *sense* organs and it is providing the idea about the quality of formulation. The Organoleptic Parameters of the formulation are mentioned in Table 2.

Table 2: Organoleptic parameters of Dadimashtaka churna

S No.	Parameters	Observation
1	Color	Brown
2	Odour	Spicy
3	Taste	Sweet and astringent
4	Appearance	Crystalline Powder

Pharmacognostic results revealed the presence of specific character of individual drugs i.e. Calcium oxalate crystal and tanniferous vessel of *Punica grantum*, Siliceous crystals of *Bambusa arundinacea*, oil globules, epicarp and parenchyma cells with black debris of *Piper nigrum*, spongy parenchyma of *Cinnamomum tamala*, parenchyma with secretion

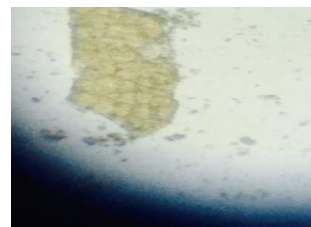
cell of *Zingerabine officinale*, tannin content of *Piper longum*, sclerenchyma and endosperm of *Cuminum cyminum*, striated cuticle of *Trachyspermum ammi*, endosperm of *Coriandrum sativum* and pollen grain of *Mesua ferrea*.



a. Calcium oxalate crystal of *Punica grantum*



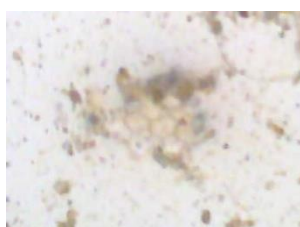
b. Tanniferous vessel of *Punica grantum*



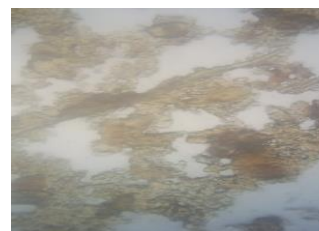
c. Parenchyma of *Punica grantum*



d. Spongy Parenchyma of *Cinnamomum tamala*



e. Parenchyma with secretion cell of *Ginger*



f. oil globules of *Piper longum*



g. Parenchyma cells with black debris



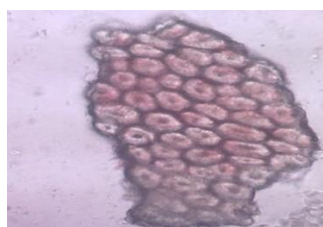
h. Sclerenchyma of *Cuminum cyminum*



i. Endosperm of *Cuminum cyminum* of *Piper nigrum*



j. Striated cuticle of *Trachyspermum ammi*



k. Endosperm of *Coriandrum sativum*



l. Tannin content of *Piper longum*



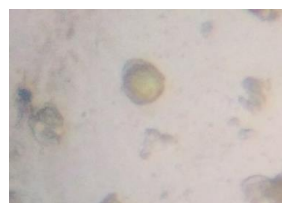
m. Fibre of
Cinnamomum zeylanicum



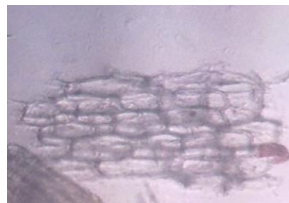
n. Siliceous crystals
Bambusa arundinacea



O. Epicarp of
Piper nigrum



p .Pollen grain of
Mesua ferrea



q sclerenchyma of
Mesua ferrea



r. Broken fibres of
Bambusa arundinacea

Fig. 1: Photographs of powder microscopic of Dadimashtaka Churna:

The preliminary Phytochemical evaluation revealed the presence of carbohydrate, terpenoids, flavonoids and tannins (Table 3).

Table 3: Phytochemical result Dadimashtaka Churna

S.No	Phytoconstituents	Observation
1	Carbohydrates	+
2	Alkaloids	-
3	Glycosides	-
4	Terpenoids	+
5	Flavanoids	+
6	Tannin	+
7	Steroids	-

CONCLUSION:

Pharmacognostical and phyto-chemical evaluation of Dadimashtaka churna illustrated the specific characters of all ingredients which were used in the preparation. The pharmacognostical and phyto-chemical analysis of Dadimashtaka churna provides substantial information for the proper identification, authentication, and scientific evaluation of the final product/drug. On the basis of observations made and results of studies, this study may be beneficial for future researchers and can be used as a reference standard in the further quality control researches.

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