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Research Article

PHARMACOANALYTICAL AND PHYSICOCHEMICAL STANDARDIZATION OF *DADIMADI CHURNA*

Kadam Rutuja Dharmaraj[1]*, Susheel Shetty[2], K. Kiran[3]

*[1]PG Scholar, [2]Principal, Professor, [3]Associate Professor, Department of Kayachikitsa, Alva's Ayurveda Medical College & Hospital, Moodbidri, Karnataka, India.

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ABSTRACT

Dadimadi Churna is Ayurvedic formulation Mentioned in *Asthanga Hridaya, Kasachikista* chapter. This yoga which is in the form *Sukshma churna* (fine powder) is administered along with *Madhu* (honey) as *Anupana.* This yoga relieves anorexia, kindles digestive fire, improves cough and cold. In this study organoleptic characters such as loss on drying, total ash, acid insoluble ash, acid soluble extractive, water soluble ash, water soluble extractive tests were carried out. Physicochemical and analytical evaluation of *Dadimadi Churna* confirmed that it complies with standard quality parameters such as low moisture content, minimum level of inorganic impurities, proper ash values, water, and alcohol, soluble extractives of a very high value which show that it is rich in bioactive compounds, and a slightly acidic pH which agrees with its traditional use in the treatment of digestive disorders, thus confirming its purity, stability, therapeutic potential, and providing the data for standardization and quality control in Ayurvedic practice.

INTRODUCTION

Standardization is the process of defining and implementing consistent and clear specifications for technologies and Processes that are within a specific area of technology.[1] Among the various aspects of herbal products, standardization is crucial. It is well known that there are significant differences between the effectiveness and the quality of herbal medicines based upon a number of variables. For Example, the selection of raw materials, environmental conditions, how the herbs are prepared and how products containing the herbs were stored will affect the quality and efficacy of the products. Therefore, in order to maintain consistency, safety and efficacy of the treatment of patients, it is also essential that, through the process of evaluation of herbal products, not only the quality and efficacy of products, but also, clear and well, defined standards be formulated for the herbal preparations.

Establishing these standards creates a strong foundation for future scientific validation and research in Ayurvedic medicine.

Dadimadi churna is an Ayurvedic formulation mentioned in *Astanga Hridaya Chikitsa Sthana 3rd chapter Kasachikitsa Adhyaya* which includes ingredients are *Dadima* (Punica granatum), *Pippali* (Piper longum), *Maricha* (Piper nigrum), *Shunti* (Zingiber officinale) and *Guda* (jaggery).[2] This yoga which is in the form of *Sukshma churna* (fine powder) is administered along with *Madhu* (honey) as *Anupana.* This yoga is indicated in anorexia, kindles digestive fire, improves cough and cold.

AIM AND OBJECTIVE

To establish standards for *Dadimadi churna* by using proper analytical parameters.

MATERIALS AND METHODS

Collection and identification of Raw drugs

The raw drugs were collected from Alva's Pharmacy, Mijar and was authenticated by Department of Dravyaguna, Alva's Ayurveda Medical College, Moodbidri.

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Table 1: Botanical name, family, synonyms, and part used of drugs in *Dadimadi Churna* formulation

Drug	Botanical Name	Family	Synonyms	Part Used	Quantity
Dadima [3]	*Punica granatum*	Punicaceae	*Phalashadava, Swadamla, Raktabeeja*	Seed	96 g
Pippali [4]	*Piper longum*	Piperaceae	*Krishna, Kola, Tikshna, Ushna*	Fruit	48 g
Maricha [5]	*Piper nigrum*	Piperaceae	*Dhanwantari, Ushna, Tikshna*	Fruit	48 g
Shunti [6]	*Zingiber officinale*	Zingiberaceae	*Shringavera, Nagara, Vishwabheshaja*	Rhizome	48 g
Guda[7]	—	—	*Sisupriya, Ikshurasa, Rasapakaja*	—	384 g

Preparation of the formulation

Dadima seeds were separated from the fruit, dried under sunlight followed by shade drying, finely powdered, mixed with *Trikatu churna* (*Pippali*, *Maricha*, *Shunti*) and *Guda*, sieved, and stored in an airtight container. The formulation was prepared at Alva's Pharmacy, Mijar.

Analytical Study

The studies conducted were, organoleptic characters, loss on drying, total ash, acid insoluble ash, water soluble ash, acid soluble extractive and water-soluble extractive. The study was performed in Department of Pharmaceutical Chemistry and Pharmacognosy, Amrith Labs Nisargam Private Limited, Shimoga.

Physico-chemical Evaluation [8]

Loss on Drying

An accurately weighed 30gm of quantity of the powdered drug was dried in a hot air oven and maintained at 105°C until a constant weight was achieved. The dish was removed and allowed to cool in a desiccator to prevent absorption of atmospheric moisture. The final weight was recorded after cooling. The percentage loss on drying was calculated with reference to the weight of the sample.

Total Ash

Total ash was determined to evaluate the total amount of inorganic matter present in the *Churna*. From the 30gm powdered sample, an accurately weighed quantity was incinerated in a silica crucible at a controlled temperature until free from carbon, and the residue obtained was weighed. The total ash value was calculated as a percentage of the air-dried sample.

Acid Insoluble Ash

The total ash obtained was boiled with dilute hydrochloric acid for the specified duration. The mixture was filtered through ashless filter paper (Whatmann 41) to separate the insoluble matter. The residue was washed thoroughly with hot water to remove acid residues. The filter paper containing the residue was dried and incinerated in a crucible until constant weight was achieved. The acid insoluble ash was calculated as a percentage of the initial sample weight.

Water Soluble Extractive

The water-soluble extractive value was determined to estimate the quantity of constituents soluble in water. 3gm of the powdered drug was used for maceration with water for the prescribed duration, followed by filtration. A measured volume of the filtrate was evaporated to dryness and dried to constant weight. Cooled in a desiccator and weighed. The extractive value was calculated as a percentage with reference to the air-dried sample and used as a standardization parameter.

Alcohol Soluble Extractive

A 3gm quantity of the powdered sample was macerated with alcohol in a stoppered flask. The mixture was shaken occasionally to facilitate extraction of soluble constituents. After completion of the maceration period, the extract was filtered. A measured portion of the filtrate was evaporated to dryness in a previously weighed dish. The residue obtained was weighed and the alcohol soluble extractive value was calculated as a percentage of the sample. It was kept on air oven at 105°C for 6 hours, cooled in desiccator for 30 minutes and weighed. The percentage of alcohol extractable matter of the sample was calculated. The experiment was repeated twice, and the average value was taken.

pH (5% Aqueous Solution)[9]

The pH value of the *Churna* was determined using a 5% aqueous solution prepared by dissolving the accurately weighed powdered sample in purified water. The pH was measured using a calibrated pH meter at room temperature. Determination of pH of the aqueous solution provides information regarding the chemical nature and stability of the formulation and serves as an additional quality control parameter.

RESULTS

Table 2: Organoleptic characteristics of *Dadimadi churna*

Parameter	Result
Colour	Brownish fine powder
Odour	Characteristic, agreeable
Taste	Sweet (*Madhura*), pungent (*Katu*) and astringent (*Kashaya)*

Table 3: Results of standardization parameters of *Dadimadi Churna*

Parameter	Result
Loss on drying (% w/w)	4.48
pH (5% aqueous solution)	4.23
Total ash (% w/w)	3.13
Acid insoluble ash (% w/w)	0.49
Water soluble extractive (% w/w)	46.59
Alcohol soluble extractive (% w/w)	45.65

DISSCUSION

The physicochemical parameters of *Dadimadi Churna* have been looked into to check its quality and consistency. A low loss on drying value means that the moisture content is very low, thus the formulation has better stability. A slightly acidic pH that is uncover is likely caused by the natural ingredients and it is suitable for digestive formulations.

The total ash and acid insoluble ash values, which represent inorganic impurities, were low according to the report. The high water, and alcohol, soluble extractive values indicate that there are a lot of soluble active constituents that come from the ingredients and which explain the therapeutic effect of the formulation.

CONCLUSION

The analytical evaluation of *Dadimadi Churna* demonstrates that the formulation meets acceptable physicochemical standards. Low moisture content, appropriate ash values, and high extractive values confirm the purity, stability, and richness of active constituents in the preparation. The mildly acidic pH supports its traditional use in digestive disorders. This study results can serve as data for the standardization and quality control of *Dadimadi Churna*. This work contributes scientific validation to the traditional formulation and supports its safe and effective use in Ayurvedic practice**.**

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***Address for correspondence**
Dr. Kadam Rutuja Dharmaraj
P.G. Scholar,
Department of Kayachikitsa,
Alva's Ayurveda Medical College & Hospital, Moodbidri, Karnataka,
Email: krutuja366@gmail.com