WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 14, Issue 8, 992-1003. Research Article ISSN 2277–7105

MODIFICATION OF *DADIMASHTAKA CHURNA* INTO TABLET FORM

Sruthy M.[1]* and Dr. Sanila V. K.[2]

[1]MD Scholar Department of Rasashastra and Bhaishajyakalpana, Government Ayurveda College Kannur.

[2]Associate Professor, Department of Rasashastra and Bhaishajyakalpana, Government Ayurveda College Kannur.

Article Received on
25 February 2025,

Revised on 17 March 2025,
Accepted on 06 April 2025

DOI: 10.20959/wjpr20258-36281

***Corresponding Author**
Sruthy M.
MD Scholar Department of Rasashastra and Bhaishajyakalpana, Government Ayurveda College Kannur.

ABSTRACT

Traditional dosages were created to improve the therapeutic effectiveness of pharmaceuticals. The drug is the main component of any stream of medicine. So, in reality, the effectiveness of any treatment plan depend upon the dosage and the mode of formulation in which it is given. A dosage form that exhibits rapid action, ease of administration, and extended potency retention is the optimal choice. Since, the success of treatment depends on medication's superiority, drug research is prioritized in medical research. Even though, the Ayurvedic formulations are very effective in clinical practice, its stability & palatability are the major concern for the practitioners, especially those preparations which are in the form of *churna*. Modification into a new dosage form is necessary in the present scenario. *Bhavana* with the same *kashaya churna* tends to increase the potency of the drug. It also increases stability, potency, absorption, reduces the surface area and act as a binding agent. **Methods:** *Dadimashtaka churna* was prepared as per the *Ashtangahridaya chikitsasthana, Atisara rogadhikara*. *Dadimashtaka churna* is processed with the *Kashaya* of the same for seven times. *Bhavana Kashaya* is prepared in the ratio of 1:8. Thus, the *bhavita churna* is modified into tablet through tableting machine and analytical values of both *churna* and tablet are evaluated. **Results:** *Dadimashtaka churna* has been converted into tablet by *bhavana* and the analaytical parameters seems to be more stable in tablet than that of *churna*.

KEYWORDS: Dosage form, *Dadimashtaka churna*, *Dadimashtaka* tablet, *Bhavana.*

INTRODUCTION

Churna is a fine powder made by certain drugs or combination of drugs. Each ingredient is pulverized separately and mixed together. *Churna* is also called as *raja* and *Kshoda.*[1] There are many varieties of *Churnas* and every *Churna* has its own demand in the market. There are many formulations which are effective in treating various kinds of illness. But, shelf life period, palatability, transportation, storage are some of the challenges that has to be faced. Modification of Ayurvedic formulations and establishing its effectiveness without changing its classical composition is the need of the hour. *Bhavana* increases stability, potency, absorption, reduces the surface area and act as a binding agent. *Churna Kriya*, the concept of potentiating the single or compound drug using their own *Swarasa / Kashaya* is recommended by *Charaka. Bhavana* ensures a reduced quantity of drug having broad spectrum activities.[2] The potentiation of drugs is done with their own juices or the juices having similar potency. Thus synergistic action of drugs can be ascertained. *Dadimashtaka churna*, a polyherbal formulation mentioned in *Ashtangahridaya Atisara prakarana.*[3] As a part of the product development, *Dadimashtaka churna* is processed with the *kwatha* of the same ingredients for seven times which in turn increases the potency of the medicine and thus decreases the doses of the medicine.[2] Taste is an important factor that should be taken to consideration as most of the drugs are administered through oral route. Unpalatable medicines especially *churnas* with unpleasant taste are hesitated by the patients in prescribed dosage, which may affect the outcome of the treatment. By considering such factors, modification of formulations into a more acceptable form is a necessary in the present scenario.

MATERIALS AND METHODS

The work has been carried out in two steps.

Pharmaceutical study & Analytical study

A. Pharmaceutical study

Dadimashtaka churna was prepared according to reference mentioned in *Ashtangahridaya chikitsasthana, Atisara rogadhikara.*

The procedures involved in preparation of formulation are.

- ✓ Collection of genuine raw materials

- ✓ Authentication of raw materials
- ✓ Processing of raw materials
- ✓ Preparation of *Dadimashtaka churna*
- ✓ Packaging of *Dadimashtaka churna*

Collection of genuine raw materials

The raw materials except sugar required for the preparation of *Dadimashtaka churna* was purchased from authentic drug suppliers in Taliparamba. *Tugakshiri* is obtained in the powder form itself. Sugar was purchased from the local market in Pilathara.

Authentication of raw materials

All the drugs purchased from the dealer were authenticated by Department of Dravyaguna department of GAVC Kannur by pharmacognostic evaluation.

Pharmacognostic evaluation

Pharmacognostic evaluation of the ingredients of *Dadimashtaka churna* was conducted in the Pharmacognosy lab of Department of Dravya Gunavijnana, Government Ayurveda College, Kannur.

Processing of raw materials

All the raw drugs were washed thoroughly and were dried in sunlight for 3 days, after proper drying it was collected for powdering.

Preparation of *Dadimashtaka churna*

Table 1: Quantity of ingredients of *Dadimashtaka churna* for one batch.

S.L NO	Ingredients	Latin name	Parts used	Quantity
1	*Tugakshiri*	*Maranta arundinacea*	Rhizome	6.66 g
2	*Ela*	*Elettaria cardamomum*	Fruit	13.3 g
3	*Twak*	*Cinnamomum zeylanicum*	Stem bark	13.3 g
4	*Patra*	*Cinnamomum tamala*	Leaf	13.3 g
5	*Nagakesara*	*Mesua ferrea*	Stamen	13.3 g
6	*Yavani*	*Trachyspermum ammi*	Fruit	26.6 g
7	*Dhanyaka*	*Coriandrm sativum*	Fruit	26.6 g
8	*Ajaji*	*Cuminum*	Fruit	26.6 g

		cyminum		
9	*Pippali moola*	*Piper longum*	Root	26.6 g
10	*Shunti*	*Zingiber officinale*	Rhizome	26.6 g
11	*Maricha*	*Piper nigrum*	Fruit	26.6 g
12	*Pippali*	*Piper longum*	Fruit	26.6 g
13	*Dadimatwak*	*Punica granatum*	Fruit rind	213.3 g
14	*Sita*	Sugar		213.3 g

Fig. 1: Dadimashtaka churna beforeadding sita and tugakshiri.

Fig.2 Dadimashtaka churna after adding sita and tugakshiri.

PROCEDURE

Tugakshiri was already purchased in powder form. Thus, 13 drugs, including sugar were powdered using instant grinder and fine powder is obtained. To obtain fine powder all the drugs powdered were individually passed through sieve no:85. All the individual powders are transferred in to the large mouthed vessel and is homogeneously mixed using spatula. In this way, other two batches were also prepared.

Precautions taken during preparation of *Dadimashtaka churna*

- ✓ All the drugs should be properly washed and should be dried in sunlight.
- ✓ Drugs should only be powdered after the appropriate drying process.
- ✓ Each drug is powdered separately.
- ✓ The medicine should be separated into individual powders and run through sieve no. 85.
- ✓ The vessels for the preparation of formulation should be sterilized and should be moisture free.

DADIMASHTAKA TABLET

According to *Acharya Charaka*, giving *bhavana* along with its own *swarasa* increases the medication's effectiveness, a modest amount of the medication has the most impact. *Churnakriya* is the term for this notion, in which *bhavya dravya* is triturated using liquid preparations of the same ingredients, such as *swarasa, kwatha, hima, phanta* and *arka.* Since, *kwatha* is also known as *swarasa*, according to *Dalhana, Kwatha* of the same medication can be given in place of *swarasa* when *swarasa* isn't accessible for *bhavana*. In light of the afore mentioned idea, it was determined to make *Dadimashtaka* tablet by giving seven times *bhavana* in the *kwatha* of same ingredients of *Dadimashtaka churna* except *sita* and *tugakshiri*. They are excluded as they form syrup consistency while boiling.

Table 2: Quantity of ingredients of *Dadimashtaka* tablet.

S.L NO	Ingredients	Latin name	Parts used	Quantity
1	*Tugakshiri*	*Maranta arundinacea*	Rhizome	20 g
2	*Ela*	*Elettaria cardamomum*	Fruit	40 g
3	*Twak*	*Cinnamomum zeylanicum*	Stem bark	40 g
4	*Patra*	*Cinnamomum tamala*	Leaf	40 g
5	*Nagakesara*	*Mesua ferrea*	Stamen	40 g
6	*Yavani*	*Trachyspermum ammi*	Fruit	80 g
7	*Dhanyaka*	*Coriandrm sativum*	Fruit	80 g
8	*Ajaji*	*Cuminum cyminum*	Fruit	80 g
9	*Pippali moola*	*Piper longum*	Root	80 g
10	*Shunti*	*Zingiber officinale*	Rhizome	80g
11	*Maricha*	*Piper nigrum*	Fruit	80 g
12	*Pippali*	*Piper longum*	Fruit	80 g
13	*Dadimatwak*	*Punica granatum*	Fruit rind	640 g
14	*Sita*	Sugar		640 g

Preparation of *Dadimashtaka* tablet

- ✓ Collection of genuine raw materials
- ✓ Authentication of raw materials
- ✓ Processing of raw materials
- ✓ Preparation of *Dadimashtaka* tablet
- ✓ Packaging of *Dadimashtaka* tablet

Collection of genuine raw materials

The raw materials except sugar required for the preparation of *Dadimashtaka* tablet was purchased from authentic drug suppliers in Taliparamba. Sugar was purchased from the local market in Pilathara.

Authentication of raw materials

All the drugs purchased from the dealer were authenticated by Dravyaguna department of GAVC Kannur by pharmacognostic evaluation.

Processing of raw materials

All the raw drugs were washed thoroughly and were dried in sunlight for 3 days, after proper drying it was collected for powdering.

Preparation of *Dadimashtaka* tablet

- **Preoperative procedure**

Preparation of *Dadimadi kwatha*

All the ingredients for *Dadimashtaka churna* excluding *tugakshiri* and sugar are coarsely powdered and 8 times of water was added and are reduced to 1/4.

Table 3: Quantity of ingredients for preparation of *Dadimadi kwatha.*

S.L NO	Ingredients	Latin name	Parts used	Quantity
1.	*Ela*	*Elettaria cardamomum*	Fruit	40 g
2.	*Twak*	*Cinnamomum zeylanicum*	Stem bark	40 g
3.	*Patra*	*Cinnamomum tamala*	Leaf	40 g
4.	*Nagakesara*	*Mesua ferrea*	Stamen	40 g
5.	*Yavani*	*Trachyspermum ammi*	Fruit	80 g
6.	*Dhanyaka*	*Coriandrm sativum*	Fruit	80 g
7.	*Ajaji*	*Cuminum cyminum*	Fruit	80 g
8.	*Pippali moola*	*Piper longum*	Root	80 g
9.	*Shunti*	*Zingiber officinale*	Rhizome	80 g
10	*Maricha*	*Piper nigrum*	Fruit	80 g
11	*Pippali*	*Piper longum*	Fruit	80 g
12	*Dadimatwak*	*Punica granatum*	Fruit rind	640 g
				Total= 1360 g

Preparation of *Dadimadi kwatha*

- Every medication listed in Table No. 51 was ground into a coarse powder and passed through Sieve No. 22.
- As per the ratio, to 1360 g of coarsely powdered drug, 8 times of water are to be added i.e. 11 L of water.
- A 12 L stainless steel vessel is taken and all the coarsely powdered drugs are added.
- Then, 2.75 L of water is added and is marked as it is the $1/4^{th}$ of the *kashaya.* After marking, 8.25 L of rest of the water is added and is boiled.
- After 4 hours, the *kashaya* required for the *bhavana* got reduced to 2.75 L.

- After self cooling it was used for the preparation of *Dadimashtaka* tablet.

Bhavana

Bhavana is given in *Dadimadikwatha.* In total, 7 times *bhavana* is done in *Dadimadi kwatha*. Each time the amount of *kashaya* used for *bhavana* medium is different in quantity and also the weight of *Dadimashtaka churna* before and after *bhavana* is also noted.

Table 4: Weight of DC before and *bhavana* along with duration.

Days	Weight of *Dadimashtaka churna* before *bhavana*	Amount of *kwatha* added	Weight of wetmass after *bhavana*	Duration of *bhavana*	Drying period (45^0 in tray dryers) in hours	Remarks
Day 1	1.860 kg	1.375 L	2.735 kg	10 minutes	24 hr	Grinding in grinder
Day 2	1.655 kg	1.350 L	3.26 kg	10 minutes	24 hr	Grinding in grinder
Day 3	1.585 kg	1.380 L	3.46 kg	25 minutes	22 hr	Grinding in grinder
Day4	1.385 kg	1.375 L	2.76 kg	15 minutes	16 hr	Grinding in grinder
Day5	1.305 kg	1.365 L	2.305 kg	15 minutes	23 hr	Grinding in grinder
Day6	1.215 kg	1.225 L	2.160 kg	15 minutes	26 hr	Grinding in grinder
Day 7	1.270 kg	1.350 L	1.945 kg	15 minutes	24 hr	Grinding in grinder

Total weight of the medicine for tableting without *sita* and *tugakshiri* = 1.100 kg Weight of the sugar powder - 640 g

Weight of *Tugakshir*i - 20 g

Total weight of Active ingredients before tableting - 1.720 kg

Additives added are

1. Dicalcium phosphate - 99 g
2. Starch - 143 g
3. Talc - 20 g

■ **Operative Procedure**

✧ To the *Bhavita Dadimashtaka churna, tugakshiri* and sugar are added and are blended homogeneously.

- ✧ Add paste prepared with starch to that and mix it in mass mixer for 30 minutes.
- ✧ After proper mixing, do wet granulation through granulator at sieve no:16 and kept it dry till moisture become 4%.
- ✧ After that, mix the granules with talc.
- ✧ After proper mixing, it is subjected for tableting.
- ✧ Punch size was 12.4 and punched out in Convex shape
- ✧ Total weight of the tablet is 750 mg in which 600 mg constitute the drug and 150mg is the excipients.

***Dadimashtaka* tablet**

Fig. 3 DC for DT preparation Before mixing

Fig. 4 *Kashayam* preparation

Fig. 5 During *bhavana* in grinder

Fig. 6 In the middle of the *bhavana*

Fig. 7 After *bhavana* before drying

Fig. 8 Tabletting

Fig. 9 *Dadimashtaka* tablets.

RESULTS

ANALYSIS OF DC and DT

Table 5: Organoleptic features of DC and DT at initial month.

0^{th} month	DC			DT		
	B1	**B2**	**B3**	**B1**	**B2**	**B3**
Appearance	Brown coloured powder	Brown coloured powder	Brown coloured powder	Brown coloured round	Brown coloured round	Brown coloured round
				shaped biconvex tablet	shaped biconvex tablet	shaped biconvex tablet
Colour	Brown	Brown	Brown	Brown	Brown	Brown
Consistency	Powder	Powder	Powder	Solid mass	Solid mass	Solid mass
Odour	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic

Table 6: Analytical parameters of DC.

DC	1^{st} batch	2^{nd} batch	3^{rd} batch
Total ash(%)	3.86	3.93	3.86
Water soluble extractive (%)	50.17	49.36	49.67
Alcohol soluble extractive (%)	37.95	36.53	35.93
Acid insoluble ash (%)	0.53	0.55	0.51
pH	4.45	4.47	4.46
Loss on drying(%)	5.38	5.84	5.89
Migration of Content and intact pack	Not observed	Not observed	Not observed
TLC Profile	No band disappeared/No secondary	No band disappeared/No	No band disappeared/ No secondary

	band appeared	secondary band appeared	band appeared
Microbiology testing			
Total plate count for bacteria	92,000 CFU/g	89,000 CFU/g	90,000 CFU/g
Total yeast and mold count	20,000 CFU /g	17,000 CFU /g	18,000 CFU /g

Table 7: Analytical parameters of *Dadimashtaka* tablet.

DT	**1st batch**	**2nd batch**	**3rd batch**
Disintegration(minutes)	24.3	25.3	0th month
Friability	Negligible variation is noted	Negligible variation is noted	24.18
Average weight(g)	752.1	746.5	Negligible
			variation is noted
Total ash(%)	8.42	8.31	752.5
Water soluble extractive (%)	46.89	48.57	8.41
Alcohol soluble extractive (%)	26.33	27.83	46.13
Acid insoluble ash (%)	1.29	1.26	26.64
pH	4.68	4.70	1.30
Loss on drying(%)	5.54	6.40	4.67
Migration of content and intact pack	Not observed	Not observed	6.43
TLC Profile	No band disappeared/No secondary	No band disappeared/ No secondary band appeared	No band disappeared/No secondary band appeared
Microbiology testing			
Total plate count for bacteria	42,000 CFU/g	58,000 CFU/g	98,000 CFU/g
Total yeast and mold count	<1000 CFU/g	<1000 CFU/g	<1000 CFU/g

DISCUSSION

Vati kalpana is one of the most praised and recommended formulations in Ayurvedic pharmaceuticals. Long- term potency preservation, drug preparation for ease of administration, fast action, ease of handling and transportation are all taken into account.[4] *Guti-Vati kalpanas,* currently utilized in the pharmaceuticals, offers all these requirements which provides numerous advantages in the field of medicine. Herbal or Herbo-mineral raw material powders are triturated with different liquid forms with a few binding agents and then rolled into pills with appropriate dose.

However, the type, quantity and length of *bhavana* directly affect the final product's efficacy. Increased *bhavana* number has shown improved efficacy and also helps to lower the dosage. Adding to the final product's potency and imparting each *bhavana dravya*'s characteristics in to the formulation during the process of *bhavana* also aids in dosage reduction.[5] During *Bhavana*, the materials with liquid media are rubbed between the rough surfaces of mortar and pestle. This results into breakdown of the material by rubbing action between two surfaces i.e. surface phenomena, it is also called as attrition. When stress in the form of attrition is applied, the particle surfaces chip and produce small particles. Smaller the particle size greater is the absorption rate from GIT and hence the greater is bioavailability. Additionally, it extends the shelf life of the final product. *Dadimashtaka churna* is converted into tablet form after having *bhavana* with the *kwatha* of *Dadimashtaka churna*. *Bhavana* is given for 7 times which in turn increases the potency of the drug by impregnating the qualities of *bhavana dravya* to the formulation. As the *bhavana* media selected for the trituration is the *kwatha* of the same *yoga*, it helps in compromising the dose to a much lower than the *churna* and also helps in providing double strong effect.

DADIMASHTAKA TABLET OVER *CHURNA*

Dadimashtaka churna has more surface area than the tablet which accelerates the presence of moisture content and also the growth of the microbes. All the parameters performed here are within the ICH guideline limits. From all the parameters conducted above shows that tablet is better than *churna* in many ways. There are many advantages of *Dadimashtaka* tablet. The palatability of this medicine has improved to a much better form which was nauseating to the patients. The bioavailability of the drug product has also increased to a great extent. The amount of medication that should reach the target spot will be precise if the tablet is taken. Tablets are created in mass production which is less time consumable and the transportation is also found to be very easy. It is discovered that the churna dosage is significantly higher than the pill dosage. As the tablet has undergone seven times *bhavana* with the same *kashaya churna*, the potency of the formulation got increased and the therapeutic effect can be achieved within a short dose itself. By considering all these facts it is evident that a formulatory change is a good option for formulations like *Dadimashtaka churna* without causing much changes in the therapeutic efficacy as mentioned in the classics.

CONCLUSION

Dadimashtaka churna, are modified into compressed tablets after triturating the ingredients

in *Dadimadi kwatha* for seven times. With that *bhavana*, the dosage has been reduced to much lower when compared with *churna* dosage. This modification also helps in various other challenges of *churna* like palatability, ease of transporation stability etc. The organoleptic and physicochemical evaluations of the tablet also shows better results than that of *churna*.

ACKNOWLEGEMENT

This article was presented in correspondance with my thesis which was submitted to Kerala University of Health Sciences in the year 2024.

REFERENCES

1. Sastri P, Sharangadhara Samhita with commentary, (Choukhambha Orientalia Publication, Varanasi), 2002; p-178.
2. Agnivesha, Drudhabala, Charaka; Charaka Samhita; Chakrapanidutta virachita Ayurveddipika; Kalpasthana; ch-12/48; Edited by Vaidya Yadavji Trikamji Acharya; Chaukhamba Surbharati Prakashan; Varanasi, 2011; p-673.
3. Anna Moreswar Kunte and Krsna Ramchandra Sastri Navre, Ashtangahridaya with commentaries of Sarvangasundara of Arunadatta and Ayurvedarasayana of Hemadri, Chaukhamba Sanskrit Sansthan,Varanasi, 2014; Ch-9, P-664.
4. Usha Sharma et al: Review of ayurvedic dosage form: vati kalpana. International Ayurvedic Medical Journal {online} 2023 {cited September 2023} Available from: http://www.iamj.in/posts/images/upload/2259_2266.pdf
5. Remington, The Science and practice of pharmacy, Vol. 1 & 3rd; Indian reprint edition; Wolter Kulwer Publisher, New Delhi, 2009.