



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

PHARMACEUTICAL AND PRELIMINARY EVALUATION OF DHANANJAYA VATI

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Received 10th July 2022; Revised 15th Sept 2022; Accepted 19th Oct. 2022; Available online 1st July 2023

<https://doi.org/10.31032/IJBPAS/2023/12.7.7240>

ABSTRACT

In yogaratnakara- a treatise of ayurveda, Dhananjaya vati is mentioned for kasa (cough). Pills prepared from herbal, mineral or animal's origin in round shape is known as vati or gutika. Vati kalpana is considered as the most important secondary preparation and is largely produced and sold dosage form. It is easy way to administer astringent and distasteful medicine and suitable for dispensing and transportation. It is necessary to cure kasa (cough) early because if it is not cured in time it will act as nidanarthakara vyadhi (can produce secondary diseases) to cause kshaya (correlated to TB). Dhananjaya vati is made up of only herbal drugs. It can be used upto three years if kept in cool place and air tight containers. Pills should not lose its original taste, colour, odour and form. It should be kept away from light and moisture to avoid contamination. While preparing pills all the ingredients were pounded separately and pills were dried in shade. Later physico- chemical analysis was done where pH was 5.52, loss on drying was 0.04% (after 7 hrs) and no difference came after 8 hrs, friability was 0.43%, hardness was 2 kg, disintegration time was 2 hrs 15 min. Colour was noted as light brown, odour was sweet, taste was madhur- tikta, shape was round and consistency was solid.

Key words: Dhananjaya Vati, kasa, herbal, analysis

INTRODUCTION:

In Ayurvedic pharmaceutical pills prepared from herbal, mineral or animal's origin in round shapes are known as vati or gutika [1]. Vati kalpana is considered as the most important secondary preparation and it is a largely produced and sold dosage form [2]. It is easy way to administer astringent and distasteful medicine and suitable for dispensing and transportation [3]. In classics Dhananjaya vati is mentioned for kasa (cough) [4]. It is necessary to cure kasa (cough) early because if it is not cured in time it will act as nidanarthakara vyadhi (can produce secondary diseases) to cause kshaya (correlated to TB) [5]. Dhananjaya vati contains dhananjaya (*Terminalia arjuna*), trijata (*Cinnamon, Cardamom, Bay leaves*), pippali mula (*root of Piper longum*), and trikatu (*Zingiber officinale, Piper nigrum, Piper longum*) and ardaraka swarasa (juice of wet ginger) for bhavana (trituration). All the ingredients are of herbal origin.

MATERIAL AND METHODS:

Collection of raw drug:

All the ingredients were collected from the pharmacy of SDM Ayurvedic Medical College and Hospital, Hassan, Karnataka.

Preparation of dhananjya vati:

The ingredients mentioned in **Table 1** were taken in mentioned quantity and pounded

separately in mortar and pestle. Swarasa (fresh juice) from ardraka (wet ginger) was taken in desired quantity. Then churna (powder) and swarasa (fresh juice) was sieved and filtered through clean cloth. After sieving 20.76 gram of churna (powder) and 45 ml of ardraka swarasa (ginger juice) was obtained. Ardraka swarasa (juice of wet ginger) was added to churna (powder) for bhavana (trituration). After 1st bhavana (trituration), pills were rolled but binding did not occur properly. Again bhavana (trituration) was given with 40 ml of ardraka swarasa (ginger juice). Then 1 gram of pills were rolled and kept for drying in shade. It took four days to dry completely and later stored in air tight container.

Physico – chemical analysis

Analytical Study:

The Physico - chemical parameters and organoleptic characters of Dhananjaya vati includes colour, odour, taste, shape, consistency, pH, loss on drying, friability, hardness, and disintegration time.

Determination of pH

a. Preparation of buffer solutions: Standard buffer solution: Dissolved one tablet of pH 4, 7 and 9.2 in 100 ml of distilled water.

b. Determination of pH: 1 gm of sample was taken and dissolved with 10 ml of distilled

water, stirred well and filtered. The filtrate was used for the experiment. Instrument was switched on. 30 minutes time was given for warming pH meter.

The pH 4 solution was first introduced and the pH adjusted by using the knob to 4.02 for room temperature 30°C. The pH 7 solution was introduced and the pH meter adjusted to 7 by using the knob. Introduced the pH 9.2 solution and checked the pH reading without adjusting the knob. Then the sample solution was introduced and reading was noted. Repeated the test for four times and the average reading were taken as result. The pH was noted by pH meter; first pH was noted for acidic and basic buffer solutions then for vati [6]. The pH of vati was 5.52

Loss on drying:

Oven method: China dish was weighed and tarred then 10 g of tablet was kept in powder form. China dish is kept in hot air oven at 105°C temperature for 5 hrs. Then cooled in desiccator for 30 minutes and weight was noted. Again heating was continued for 1 hour at same temperature and weight was noted. This procedure was repeated until weight variation is not more than 0.25%. Constant weight is reached is considered when we keep drug for drying and cooling for 30 minutes and difference should not

come more than 0.001g [7]. For dhananjaya vati this procedure was repeated for 5 times.

Friability:

This test is done to determine the physical strength of tablets. If tablets weight is more than 0.65g, 10 tablets should be taken. Carefully remove extra particles from tablets. Weight of 10 tablets was taken and placed in drum for 100 rotations. Then tablets are taken out and loose dust is removed. Weight is measured again and friability is calculated with the formula:

$$\frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$$

Weight loss should not be more than 2% [8]. For dhananjaya vati Friability was 0.43%

Hardness:

Hardness of tablet was tested by Monsanto hardness tester. This test describes the resistance of the tablet to chipping, abrasion and breakage under condition of storage or transportation. For testing hardness of dhananjaya vati one tablet was kept inside fixed and moving jaw of the tester. In reading scale value was adjusted to zero then screw knob was rotated when crack came in vati reading was 2 kg. Force is measured in kilograms and for production 4 kg is considered as minimum value [9].

Disintegration time:

This parameter is used to determine whether tablet, vati or pills were disintegrated in prescribed time when placed in liquid medium under prescribed experimental conditions. In 1000 ml Beaker of disintegration apparatus tank is filled with 750 ml of distilled water. Timer of the instrument was set at 90 minutes and temperature was set at 37°C. One - one vati

was placed in each tube of the apparatus. Time was noted, which is taken by vati to fully dissolve and pass through mesh. To pass this test tablets and capsules should disintegrate within 15 to 30 minutes [10]. Six vati of 2.75g was put in disintegrator. Dhananjaya vati took 2 hrs and 15 minutes to pass through mesh.

RESULTS:

Table 1: Ingredients with quantity

Sl. No.	Sanskrit name	Botanical name	Part used	Quantity
1.	Dhananjaya (arjuna)	<i>Terminalia arjuna</i>	Dry Bark	5 gram
2.	Tvak	<i>Cinnomum zeylanicum</i>	Dry Bark	5 gram
3.	Ela	<i>Elettaria cardamomum</i>	Dry Seeds	5 gram
4.	Patra	<i>Cinnomum tamala</i>	Dry Leaf	5 gram
5.	Pippali mula	Root of <i>Piper longum</i>	Dry Root	5 gram
6.	Shunthi	<i>Zingiber officinale</i>	Dry Rhizome	5 gram
7.	Maricha	<i>Piper nigrum</i>	Dry Seed	5 gram
8.	Pippali	<i>Piper longum</i>	Dry Seed	5 gram
9	Ardraaka swarasa	<i>Zingiber officinale</i>	Fresh Juice	85 ml

Table 2: Properties of ingredients

Sl. No.	Drug name	Rasa	Guna	Virya	Vipaka
1.	Dhananjaya (arjuna)	Kashaya (astringent)	Laghu (light), Ruksha (Dry)	Shita (cold)	Katu (pungent)
2.	Tvak	Katu (pungent), Tikta (bitter), Madhura (sweet)	Laghu (light), Teekshna (Sharp)	Ushna (hot)	Katu (pungent)
3.	Patra	Tikta (bitter), Madhura (sweet)	Laghu (light), Teekshna (Sharp)	Ushna (hot)	Katu (pungent)
4.	Ela	Katu (pungent) Madhura (sweet)	Laghu (light), Ruksha (Dry)	Shita (cold)	Madhura (sweet)
5.	Pippali mula	Katu (pungent)	Laghu (light), tikshna (Sharp), snigdha (unctuous)	Anushna	Madhura (sweet)
6.	Shunthi	Katu (pungent)	Laghu (light), snigdha (unctuous)	Ushna (hot)	Madhura (sweet)
7.	Maricha	Katu (pungent)	Tikshna (Sharp), Laghu (light)	Ushna (hot)	Katu (pungent)
8.	Pippali	Katu (pungent)	Laghu (light), tikshna (Sharp), snigdha (unctuous)	Anushana	Madhura (sweet)
9	Ardraaka swarasa	Katu (pungent)	Tikshna (sharp), ruksha (Dry), guru (Heavy)	Ushna (hot)	Madhura (sweet)

Table 3: Organoleptic Parameters:

Sl. No.	Parameters	Observation
1.	Colour	Light brown
2.	Odour	Sweet
3.	Taste	Madhur (sweet) – tikta (bitter)
4	Shape	Round
5.	Consistency	Solid

Table 4: Observations:

Sl. No.	Parameters	Readings
1.	pH	5.52
2.	Loss on drying	0.04% (after 7 hrs) No difference (after 8 hrs)
3.	Friability	0.43%
4.	Hardness	2 kg
5.	Disintegration time	2hr 5min



a) Arjuna tvak

b) Tvak

c) Patra

d) Ela



e) Pippali mula

f) Shunthi

g) Maricha

h) Pippali



i) Fine powder

j) Ardraka swarasa

k) Bhavana

l) After bhavana



m) Vati

n) Final product

DISCUSSION:

Dhananjaya is a synonym of arjuna (*Terminalia arjuna*) and this formulation is named as dhananjaya vati because it is first ingredient of this formulation. In Dhananjaya vati almost all ingredients have kasahara (useful in cough) properties. Arjuna (*Terminalia arjuna*) is hridya (cardio tonic) and kapha-pittahara (alleviates kapha and pitta) [11]. Tvak (*Cinnomomum zeylanicum*) is kasahara (reduces cough), kanta shuddikara (clears throat) and mukha roghahara (useful in oral diseases) [12]. Patra (*Cinnamomum tamala*) is having kapha vatahara (alleviates kapha and vata) properties [13]. Ela (*Elettaria cardamomum*) is kasa swasahara (useful in cough and asthma) and mukhashodhaka (cleanses oral cavity) [14]. Pippalimula (*Root of Piper longum*) is swasahara (useful in asthma) [15]. Shunthi (*Zingiber officinale*) is kasa – swashahara (useful in cough and asthma) [16]. Maricha (*Piper nigrum*) is swashahara (useful in asthma) [17]. Pippali (*Piper longum*) is Kasa- swasahara (useful in cough and asthma) and have rasayana properties [18]. Ardraka swarasa (fresh ginger juice) is swarya [19] which is used to bhavana procedure. While giving bhavana it took two bhavanas to attain subhavit lakshana (test of perfectness).

CONCLUSION :

Dhananjaya vati is made up of only herbal drugs. So it can be used upto three years if kept in cool place and air tight container. Pills should not lose its original taste, colour, odour and form ⁽²⁰⁾. And kept away from light and moisture to avoid contamination. While preparing pills all the ingredients should be pounded seperately and pills should be dried in shade. Commonly this vati is not in the practice. This can be taken as priliminary data and further studies should be taken up to understand the mechanism of Dhananjaya vati.

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