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A CRITICAL REVIEW ON VATI *KALPANA* AND IT'S ANALYTICAL PARAMETERS

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ABSTRACT

Vati kalpana is a major part in *Bhaishajya kalpana* also known as Ayurved pharmaceutics and it plays important role in clinical practice of Ayurveda owing to many advantages like easy administration, palatability, convenient form for dispensing and transportation. This era requires standardization of every herbal formulation. Standardization is the process of developing and agreeing upon technical standards. In this standardization process raw drug collection, in process standardization and finished product standardization are thoroughly inspected and completed the standardization process by various analytical tests. So In this article we discuss on *vati kalpana* and its analytical parameters.

Keywords *Vati kalpana*, Standardization, Analytical parameters

INTRODUCTION

Ayurveda is the most essential part of medical system. The main link of any medicine is its drugs and to easily ingest the drug, a lot of preparations have been developed in ayurvedic medical system. *Vati kalpana* is the important part of dosage form.*Vati kalpana* is one among the important secondary preparation in Ayurveda pharmaceutics. This is largely produced and solid dosage form in pharmaceutical world of all medication systems. *Vati* may be prepared from the herbal, herbo mineral or mineral drugs.[1]

Fine powder (*Churna*) of medicinal drugs when mixed with water, *swarasa, gomutra, godugdha a*nd *madhu* etc. and is prepared in various sizes is , called as *Vati, Vatak* or *Gutika*. Combination of semisolid *kalka* of one or more drugs by mechanical machines or by hand in the circular form is called as *vati*. Standardization of herbal drugs means determination of its quality and confirmation of its identity and detection of nature of adulterant by various analytical parameters.[2] In this article we will discuss about the standardized analytical parameters of *vati kalpana* along with the *vati kalpana nirmana*.

Synonyms of *Vati* [3]:-

Vataka, Modaka, Gutika, Vatika, Pindi, Guda & Varti

Method of *Vati Nirmana*[4]-

2 Types - *Sagni Vati Nirmana Niragni Vati Nirmana*

Sagni Vati Nirmana :- If the preparation of *vati* is made with the help of Agni is called as *Sagni vati nirmana*. In this process *Guda, Guggulu*, Sugar etc. cooked by adding water and when appearance like of *Leha*, then fine powder of drugs should be added to make paste for *vati nirmana*. Eg- *Yogaraj Guggulu, Chandraprabha Vati, Simhnad guggulu*

***Niragni Vati Nirmana* :-**

If preparation of *vati* is made without the help of *Agni* that is called as *Niragni vati nirmana*. In this method *vati* is made without help of *Agni*. If honey is used, then fine powder of drugs is properly mixed in honey after this *vati* should be made. Eg- *Eladi Gutika, Shilajatwadi Vati.* If *Gomutra, Swaras, Kwath* are used in the formation of *vati*, then fine powder of

drugs should be given *bhavana* by these liquids and after this *vati* should be made. Eg- *Sanjeevani vati. Chitrakadi vati*

General Principal of *Vati Nirmana*[5] :-

- If Sugar (*sharkara*) is added, it should be taken four times to the quantity of *churna*
- If *guggulu* / Honey are added, it should be taken in equal quantity to that of *churna.*
- If liquid Substance like *Swarasa*, *Kwatha*, *gomutra* etc. is needed, its double quantity should be used.
- If preparation of *vati* with Jaggary, it should be taken double quantity of *churna*.
- If *Parada* and *Gandhaka* are mentioned, *Kajjali* is made first then other drugs are added, one by one according to formula .
- If *guggulu* is one of the ingredients, then no binding material is needed.
- If *vansalochan* is mentioned in the *vati* formula, first *vanslochana* has to be grinded with little *churna* then rest of the *churna* little by little has to be incorporated and mixed well.

Table No. 1: Proportion of Binding agents in *Vati*[6]

Binding agent	*Sita*	*Guda*	*Guggulu & Madhu*	*Drava Dravya*
Proprtion of Binding gent with respect to *Churna*	4 parts	2 parts	Equal	2 parts

PRECAUATION OF *VATI NIRMANA*[7]:-

Before Preparation of *Vati* -

- *Guggulu* should be used after purification (*shodhan*).
- Preparation of *vati*, fine *churna* must be used.(Mesh size No.-85)
- Drug used in *vati nirmana* should be free from dust, insects and worms etc.
- *Swarasa* and *Kwatha* should be used according to their description.
- If metal and mineral are used they should be *bhasma* (ash) forms
- If *Parada* and *Gandhaka* used they should be used in *Kajjali* form.

During Preparation of *Vati*-

- Fine powder (*Churna*) of all ingredients must be properly mixed before preparation of *vati nirmana.*
- *Vati* should be equal in shape, size and appearance also.
- If preparation of *vati mardana* should be properly done.

After Preparation of *Vati*-

- Mostly Prepared *vati* should be dried in shadow.
- Prepared *vati* should be kept in air tight container.

General Dose of *Vati*[8]:-

Determination of dose of *vati* according to patient body, *bala*,disease etc. General dose of *vati* in classical text is one *Karsha* (12g). It depends upon *agni* and *koshta*.

Shelf Life of *Vati*[7]:-

Acharya Sharangdhar said shelf life of *vati* is one year and mentioned under rules of Drug and cosmetic Act 161B is given 2 years, if it is preserved free from moisture.

Characteristics of Good quality of pills/Tablets[9]:

1. It should contain the stated dose within permitted limits.
2. It should be sufficiently hard to withstand reasonable handling from the time of manufacture until they reach the consumer.
3. It should be a suitable size for easy administration and be free from physical

impurities and foreign matter, which would detract from their appearance.

Analytical Parameters of *Vati kalpana*[10]

To evaluate the quality of finished product obtained after detailed pharmacy method, certain standard criteria are define by many pharmacopeias to which tab/pill should confirm for, factors such as:

Determination of uniformity weight of pills/Tablets:

It is desirable that all the tablets of a particular batch should be uniform in weight. To determine the uniformity of weight of the tablet/pills, twenty pills are selected randomly and weigh individually in a precision weighing balance. Then average weight of each pill is determine with divided the total weight of 20 pills by 20 in each group. The highest weight, lowest weight and average weight of each group of pills are recorded.

Determination of *Vati*/ tablet hardness:

Hardness of tablet depends on the weight of the material used, space between upper and lower punches at the time of compression and pressure applied during compression. Hardness of pill is tested by placing a pill in a tab/pill hardness tester and rotate the knob to fix the pill in it. Then adjusted the scale to zero, after the setting, pressure is increased by further rotating the knob. When pill broke down the hardness is recorded as indicated in scale[11].

Test of Reducing sugar

Benidict's test: Benedict's reagent and test solution was mixed in equal quantity and kept in boiling water for 5 min. formation of red colour confirms the presence of reducing sugar[12].

Determination of Friability (Tablets)

The instruments used for this test is known as **friability test apparatus** or **friabilator**. It consist of a plastic chamber which is divided into two parts and revolves at a speed of 25 r.p.m.. a number of tablets are weighed and placed in the tumbling chamber which is rotated for four minutes or for 100 revolution. During each revolution the tablets fall from a distance of 6 inches to undergo shock. After 100 revolutions the tablets are again weighed and the loss in weight indicates the friability of the tablets. The acceptable limits of weight loss should not be more than 0.8 percent.

Determination of disintegration time:

Disintegration test is performed to find out that within how much time the tablet disintegrates. Disintegration time of pill is tested by taking three pills in a tube of the disintegrator apparatus, then adjust the apparatus in such a manner that, the complete up and down movement of both the tube in the beaker containing distilled water was repeated for 30 time per minute when the particles remained above the screen which was readily passed through it was recorded as the disintegration time of the samples. **Determination of water soluble extract**:

water soluble extract of pill is tested by taking about 5 gms of accurately weighed of the air dried pills sample is taken with 100 ml. of water, in a conical flask, then allow it to stand for 18 hours, with occasionally shaking. After 18 hours this mixture is filtered with taking precaution against loss of water. Then 20ml. of sample filtered is taken in previously weighed porcelain evaporating dish, and this is placed on a hot water bath dried constantly in oven. Then again that porcelain evaporating dish having extract is weighed and obtained quantity of water soluble extract calculated in percentage.

Determination of the ash value: To calculated ash value, at first a porcelain

crucible is weighed. Two grams of sample is taken in that weighed porcelain crucible. This porcelain crucible containing samples is placed in an electric furnace by gradually increasing the heat 550-700ºC up to the sample is free from carbon. After that it is cooled and weighed and calculation of the Ash value in percentage of both the trial drugs is recorded.

Determination of loss on drying:

To Determination of loss on drying ,a watch glass is weighed accurately, then 1 gm of sample is taken in weighed watch glass and dried in an electric hot air oven at 100ºC for 6 hours After that it is cooled and again weighed and calculate. The difference in the two weights which gives the loss on drying of the sample in percentage.

DISCUSSION

In Ancient period herbal drug formulations were used for treatment of various ailments which needed timely modifications with the progressive development in various new instruments. Reason behind this development was some shortcomings of basic formulations like less availability, less shelf life, palatability no sufficient and difficulty in dispensing. To overcome all these problems invention of some new formulations came in existence. Tablet is popular because of its properties like palatability, quicker action and long shelf life.

Its solid form helps in easy dosage fixation. Due to this, Vati consumption is very convenient to patients. Usually stability of the drug in solid dosage form is more than those in liquid form thus *Vati* can retain potency for long time. The patient can carry pills without inconvenience due to their comparatively small bulk and can consume them precisely as directed by *Vaidya*. In today's era of adulteration standardization of all single and compound formulation is very essential. In standardization we test the formulation in analytically to find out its quality and efficacy. In order to analytical study of *vati kalpana* **uniformity of weight** is indicate that all the tablets of particular batch should be uniform in weight. **Tablet Hardness** can be determined by holding the tablet in between the fingers and throwing it lightly on the floor, if it does not break it indicate that proper hardness has been obtained.[13] **Friability test** is performed to evaluate the ability of the tablets. **Disintegration test** is performed to find out that within how much time the tablet break. **Ash value** is useful in determining authenticity and purity of tablet and also these values are important qualitative standards. **Water-soluble extractive value** plays an important role in evaluation of tablets. Less extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying or formulating or storage. **Loss on drying** is a widely used test method to determine the moisture content of the tablets, although occasionally it may refer to the **loss** of any volatile matter from the tablets.

CONCLUSION

In the Ayurvedic field of practice through many types of *kalpanas* (formulations) are being used presently, *Vati kalpana* (Tablet/Pills) plays an important role in pharmaceutics of Ayurveda, owing to many advantages like easy administration, palatability, convenient form for dispensing & transporting, to keep the medicine potent for long time and also its quick action. Tablet can be prepared in several ways and product performance can be depend on suitable composition of the formulation, Due to availability of various

formulation techniques, good patients compliance and huge potential, several tablet/pill products popular in the pharmaceutical market. In today's time also, *Vati kalpana* is used in more quantity because it can be taken very easily. Therefore, we should build the Vati (tablets) in a standard manner (pharmaceutically and analytically), given this increasing use of *Vati kalpana*.

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