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Expedition of Popular Dossage Form Tablet as of *Vati* (Type of Ancient Dossage Form in Ayurveda)

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ABSTRACT

Reality substantiate that the success of healing therapy depends habitually upon the excellence of drugs; therefore, medical research effort confer stress to drug research. In *Ayurveda* Pharmacy various *Acharyas* has been added or modified the different dosage forms according to their individual skill from time to time without violating the basic fundamental principles of *Ayurveda*. In order to find out the most potent drug and to keep the medicine potent for a long time, to prepare the medicine for easy administration and also to get quick pharmacological. Present review is an attempt to find out the journey of popular dosage form from ancient to modern period and explore the concept behind the term *Vati* (a popular dosage form in *Ayurveda*). The exercise revealed that- in *Ayurveda* several types of *kalpanas* (dosage forms) are used presently. In *Ayurveda* transcripts the drug prepared in the form of tablet or pill are acknowledged as *Vati* and *Gutika*. These dosage forms are made single or multiple ingredients obtained from any plant, animal or mineral source of origin. In ancient classical texts of *Ayurveda* like *Brhatrayi* different *Vati* (tablet/pill) medications are mentioned in different circumstance. But *Acarya Sarngadhara* is considered to be the first scholar of *Ayurveda* who described the preparation of *Vati* scientifically in a separate division of *Sarngadhara samhita*. This formulation plays an important role in pharmaceutics of *Ayurveda*, on account of its numerous advantages in the vein of trouble-free administration, palatability, suitable appearance for dispensing as well as transportation.

KEYWORDS

Vati, Gutika, Tablet, Pill, Kalpana



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INTRODUCTION

In *Ayurveda* pharmaceuticals the term ‘*Vati*’ indicates the shape of a dosage form which is prepared by adding the fine powder of drug/drugs to the liquefied Jaggery or sugar or *Guggulu* or water or honey or *Swarasa* either by heating or without heating. It is considered to be one of the most admired dosage forms in *Ayurveda*. In general practice, the *Ayurveda* physicians prescribes *Vati* mostly as it is very easy to administer. Ancient scholars of *Ayurveda* have alleged about the chronological development of dosage form based on the need of patients and periods. As paradigm during the period of Acharya *Charak*, medicines were administered in the multiplicity of *Panchavidh Kashaya Kalpana* (five types of dosage forms); mostly due to easy availability of abundant fresh herbs. But along with the main five types of dosage form *Vati* was also in well-practiced. Prescription of *Vati* in the field of clinical practice is only because of its special specification than the any other dosage form. In *Madhyamakhanda* of *Sharangadhara Samhita*, ‘*Vati Kalpana*’ (formulation of tablet) along with its various synonyms has been mentioned on the cause of shape and quantity of drugs present in the *Vati*. *Vati Kalpana* fulfills all the criteria’s as a correct dosage form,

better shelf life period, easily administrable, effective and safe. In *Ayurvedic* pharmaceuticals for the preparation of *Vati* binding agent is given as primeimperative. Various natural binding agents are used for the formation of pills due to their own medicinal values in *Vati Kalpana* like Jaggery, *Guggulu*, Honey, Sugar etc. All medicinal drugs of *Ayurveda* have its own binding property. Present work sights the details about the ancient formulation of tablet in the transcript of *Ayurveda*.

History of *Vati Kalpana* (formulation of tablet): *Vati Kalpana* is considered to be one of the most ancient dosage forms since the time of *Vedic* period. It has been mentioned in *Rigveda* as the word “*Mani*”. *Mani* is circular in shape, ovoid and big in size like suppository, *Pindi*, *Modaka*, *Vataka* etc. All these types of dosage forms are obtained from *Vedic* literatures. *Vedic Yamsukta* is another *Vedic Grantha* (literature), where *vati* has been named as “*Ravdir Mani*”.

Origin of *Vati* in classics: In *Ayurveda*, *Vati Kalpana* is the outcome of *Kalka Kashaya Kapana*. Acharya *Vagbhata* has told that all the *Vanaspatika Dravyas* (herbal drugs) could be completely converted into paste form i.e. *Kalka Kalpana* with a specific shape like *Varti*, *Gutika* etc. by the pharmaceutical processes. Primary *Kalpana* is the *Kalka*



Kalpana and this principle is also applicable on *Vati Kalpana* (practical size reduction as per requirement, *Kalka* should be prepared in that specific shape). In *Madhyamakhanda* of *Sharangadhara Samhita* various synonyms of *Vati* has been provided as-*Gutika*, *Vataka*, *Vati*, *Vatika*, *Pindi*, *Modaka*, *Guda* and *Varti* etc. (Table no. 2)

Table 2. Different types of *Vati* with their probable contemporary correlation:

Sl. no	Types of Vati	Description	Modern form/correlation
1.	<i>Gutika</i>	It is made by rolling in the shape of small circular masses.	Can be compared with pills.
2.	<i>Vati</i>	<i>Vati</i> is made in the form of flat circular masses.	It is similar to tablet.
3.	<i>Guda</i>	<i>Kasthaushadhi Churna</i> (herbal drugs in powder form) is mixed with <i>Gudapaka</i> (liquefied Jaggery by heating) and organized manufactured goods are called <i>Guda</i> .	Found to be similar with coated tablet
4.	<i>Guggulu</i>	<i>Kasthaushadhi Churna</i> (powder of herbs) and <i>Bhasma</i> (ash) etc. are mixed with <i>Guggulu</i> and then it is converted into <i>Vati</i> and <i>Gutika</i> , which is known as <i>Guggulu Kalpana</i> .	-
5.	<i>Varti</i>	If the <i>Gutika</i> or <i>Vati</i> are modified into a long and oval shaped solid form, then it is called as <i>Varti Kalpana</i> . This is usually used for local administration by following routes viz. <i>Guda</i> (anus), <i>Yoni</i> (vagina), <i>Shisna</i> (penis), <i>Netra</i> (eye) etc. According to the	It is similar to Suppositories which are used to deliver medications that act both systemically and locally.

		specific routes of drug administration, the length and diameter of the <i>Varti</i> can be modified.	
6.	<i>Vataka</i>	If medicine is molded in the form of big circular mass then it is branded as <i>Vataka</i> .	-
7.	<i>Pinda</i> or <i>Pindi</i>	Drug powder is mixed with <i>Sharkara</i> and medicine is molded like <i>Pinda</i> then it is called as <i>Pinda</i> or <i>Pindi Kalpana</i> .	-
8.	<i>Modaka</i>	If the drug is changed into circular shape having large size and possessing weight around 20 g, 50 g, 100 g like big lemon fruit rolled into circular mass, then it is called <i>Modaka</i> .	-

Manufacturing process of *Vati* in

Ayurveda classics: In the preparation of *vati*, First, all the ingredients are made into powder form and then the same is mixed with binding agents such as simple water and liquefied Jaggery into the semisolid state by heating process, then the sugar is heated with the addition of some quantity of water and finally it is boiled till confectionary form Then the powders of drugs are added in the prepared binding agents as mentioned above and mixed them till the similar mass is obtained. *Vati* should be prepared by the mixer rolled or under thumb and finger in the size prescribed. *Guggulu*- gum of *Commiphora mukul* is also profusely used as binding agent in *Ayurveda*, *Guggulu* liquefies during the heating process and then *Churna* (powder)



is added uniformly with mixing each other, and finally it is made into *Vati* form. (See table no. 1)

Table 1 Quantity of *Ayurvedic* binding agents in relation to *Churna* (powder) for preparation of *Vati*

Sr No.	Name of Substances	Quantity of adding substances in the reference to <i>Churna Dravya</i>
1.	<i>Sita</i> (sugar)	Four times
2.	<i>Guda</i> (Jaggery)	Two times
3.	<i>Guggulu</i> (<i>Comiphora witgghi</i>)	Same quantity
4.	<i>Madhu</i> (Honey)	Same quantity
5.	<i>Drava Padartha</i> (Liquid sub)	Two times

Saviryata Avadhi (Shelf life of Vati):

According to *Sharangadhara Samhita* shelf life of *Vati* is 1 year. If the prepared pills are kept in the air tight containers, then that can be consumed or prescribed for maximum two years. Pills containing metals and minerals can be used for an indefinite period. The pills should not lose their original color, smell, taste, and shape/appearance. The *vati* should be protect or kept distant from moisture free environment.

MODERN VIEW OF TABLETS:

According to the Indian Pharmacopeia, pharmaceutical tablets are solid, flat, biconvex, dishes form and in unit dosage form which is prepared by compressing a drug or a mixture of drugs, with or without the addition of diluents. These dosage forms contain such a quantity of drug, which can be given as a single unit, and they

are collectively known as solid unit dosage forms. (**Table no. 3**)

There are various types of tablets depending on their structures, utility and route of administration-

Table 3 Modern types of tablets

Sl.no	Mode of administration	Types with suitable example
1.	Tablets ingested orally	1. Condensed tablet, e.g. Paracetamol tablet. 2. Multiple compressed tablet. 3. Repeat action tablet. 4. Tardy release tablet, e.g. Enteric coated Bisacodyl tablet. 5. Sugar coated tablet, e.g. Multivitamin tablet. 6. Film coated tablet, e.g. Metronidazole tablet. 7. Chewable tablet, e.g. Antacid tablet.
2.	Tablets administered in oral cavity	1. Buccal tablet, e.g. Vitamin-C tablet. 2. Sublingual tablet, e.g. Vicks Menthol tablet. 3. Troches or lozenges. 4. Dental cone
3.	Tablets administered by another route	1. Implantation tablet. 2. Vaginal tablet, e.g. Clotrimazole tablet.
4.	Tablets used to prepare solution	1. Effervescent tablet, e.g. Dispirin tablet (Aspirin). 2. Dispensing tablet, e.g. Enzyme tablet (Digiplex). 3. Hypodermic tablet.
5.	Tablet triturates	e.g. Enzyme tablet.

Ingredients of Tablet: In adding up of dynamic constituents, tablets restrain a numeral of static materials recognized as additives or excipients, Different types of commonly used excipients are mentioned in Table no.4:

Table 4 Common ingredients of Tablet

Sl. no	Name of the ingredients	Description
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1.	Diluents	Diluents are fillers which are used to fulfill the required bulk of tablet even when the drug amount itself is insufficient to construct the mass. The other reasons are to endow with superior tablet assets such as to get better cohesion, to allow employ of undeviating compression manufacturing or to promote flow.
2.	Binder and adhesive	These resources are mixed either in dry or in wet form for the formation of granules to form cohesive compacts for directly compressed tablet.
3.	Disintegrator	Disintegrates are added to a tablet formulation to facilitate its breaking or disintegration when it come up to in contact with water present in the gastro intestinal tract.
4.	Lubricants and glidants	Lubricants are anticipating to avert the adhesion of the tablet materials to the exterior of dies and punches, which reduces the inter particle friction and may improve the rate of flow of the tablet granulation. Glidants are using to endorse flow of granules or powder material by dipping the friction between the particles.
5.	Coloring agent	The use of colors and dyes in a tablet has three rationales masking of color drugs, product identification and production of extra graceful manufactured goods.
6.	Flavoring agents	For chewable tablet, flavor oil is used.
7.	Sweetening agents	For chewable tablets: Sugar, mannitol.

GRANULATION: This is the pharmaceutical act or process in which major powder elements are refined to adhere to form larger, multi-particle articles which is entitled as granules. Depending on

their consequent employ, granules are typically having a size ranging between 0.2 to 4.0 mm. The synonym of Granulation is agglomeration. It is the procedure of assembling constituent parts together by crafting bonds between them. Bonds are produced by compression or by using a binding mediator. Granulation is expansively used in the manufacturing of tablets and pellets.

Granulation technology: The granules formation is mainly divided into three parts i.e.

1. Decompression: Direct compression consists of compressing tablets which directly from powdered materials without modifying physical nature of the materials. This method is applicable for crystalline chemicals having good compressible characteristic and flow properties. It is shortly explained as-

Raw material → Weighing → Screening → Mixing → Compression.

2. Dry granulation: Steps of processing- Raw material → Weighing → Screening → Mixing → Slugging → Milling → Screening → Mixing → Compression.

When the tablet constituents are sensitive to moisture or incapable to endure prominent temperature during drying and when the tablet component have inadequate organized properties, slugging may be used



to form granules. This technique is generally recognized to as dry granulation.

3. Wet granulation: The most commonly used and most universal technique of tablet preparation is the wet granulation method. The active ingredients, diluents and disintegrates are added or intermingled adequately. For wide-ranging manufacturing shell blender, sigma blade mixer, planetary mixer, twin double cone blender, ribbon mixer etc. are usually used. Solutions of the binding agent are added to the mixed powder with stirring. The powder

**Mixing → Granulation → Drying → Blending → Tabulating → Coating
→ End Product Testing**

DISCUSSION

Present literary review remarked that the *Vati* or tablet is a popular dosage form and offer the greatest capabilities of all oral dosage form for the greatest dose precision and the least content variability. General dose of *Vati* mentioned in Ayurveda is 1 *Karsha* (12 gm) per day. But the final dose should be adjusted according to pills size, severity of the disease and strength of the patients. The dose may vary from 1 *Gunja* (125mg) to 1 *Karsha* (12 gm). Acharya has also provided the cleared standard operating process for the preparation of *Vati*.

According to Ayurveda classics preparation of *vati* can be made with or without the help

mass is wetted with the binding solution until the mass has the consistency of damp snow. Here briefly processing steps are explained as-

Raw materials → Weighing → Screening → wet massing → Sieving/Milling → Drying → Screening → Mixing → Compression.

Unit manufacturing process of tablets:

Commonly tablet manufacturing process is as followings methods and these methods are briefly as-

of *Agni* (fire/heat), if it is made with the help of *Agni* is called as *Sagni vati nirmana*. Eg- *Chandraprabha Vati Yogaraj Guggulu*. On the other hand, if the preparation is made without the help of *Agni*, that is called as *Niragni vati nirmana*. Eg- *Eladi Gutika, Shilajatwadi Vati*.

There are several advantages of this popular dosage form as they are lighter, compact, cheap, easy to pack and strip; easy to swallow with least tendency for hang-up; sustained release product is possible by enteric coating; objectionable odor and bitter taste can be masked by coating technique; suitable for large-scale production; greatest chemical and microbial stability over all oral dosage form; product identification is easy and



rapid requiring with no additional steps when employing an embossed and/or monogrammed punch face.

Though there are certain disadvantages also which are commonly facing as-difficult to swallow in case of children and unconscious patients; some drugs resist compression into dense compacts, owing to amorphous nature, low density character; drugs with poor wetting, slow dissolution properties, optimum absorption high in GIT may be difficult to formulate or manufacture as a tablet that will still provide adequate or full drug bioavailability; bitter tasting drugs, drugs with an objectionable odor or drugs that are sensitive to oxygen may require encapsulation or coating. In such cases, capsule may offer the best and lowest cost.

CONCLUSION

Physicians of Ayurveda are practiced through several types of *kalpanas* (formulations) in their clinical practice; *Vati kalpana* which is found to be similar with Tablet or Pills in contemporary science plays an important role in pharmaceuticals of Ayurveda, owing to many special advantages. *Vati* as well as the tablet or pills can be prepared in several ways; that has been scientifically documented by ancient scholars of Ayurveda and gradually

adopted by newer scientific and technological innovations which is essential for the materialization of promising as well as versatile dosage form with novel performance and characteristics. Several tablet or pill products gradually popularized in the Ayurveda pharmaceutical market as easy accessibility of various formulation techniques and good patients' compliance along with huge potentiality.



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