

Review On A formulation, Evaluation and Standardisation Parameters of Herbal Diuretic Vati by Using Herbal Drugs.

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Abstract: The system of medicine which consider Indian origin . Or the system of medicine when comes under outside and got altimated in in India culture is also called as Indian system of medicine.such as yoga , Naturopathy,unani, Homeopathy,siddha. And Ayurveda. The ayurvedic system of medicine written is accepted in oldest system of medicine which is existing in 900 B.C it takes about holistic view of physical,mental, physiological, spiritual social aspect of human life.ayurveda is based on a panchmahabhutas, tridosha, saptadhatus balance between ayurvedic formulation like vati gutika Bhasma pills. Vati is polyharbominral preparation made up of one or more components Similarly in Ayurveda Pharmacy also several Acaryas has been added or modified the different formula is or preparations according to their own experiences from time to time without violating the basic principles...This review focus on a some harbal drug used as a diuretic helps to manage kidney stones due to its Vata-Kapha balancing and Mutral (diuretic) properties. It increases urine production and helps in easy passage of kidney stones. It's include in a harbal diuretic drug and it's evolution parameters and standardization.the main object of in this review is to treat renal disease and disorder in minimum side effects with the from of harbal diuretic vati.

Keywords: Ayurveda, vati, diuretic, panchmahabhutas, gokhru,punarnava,AYUSH,etc.

Introduction

Ayurveda :

Ayurveda, according to Caraka, is knowledge which seeks to weigh life in the scales of wholesomeness and happiness against their opposites. Its main theme of health and disease, and recovery of health from disease take the stage against an inspiring background of intuitive philosophy, lofty idealism, and vivid compassion, which are the hallmarks of India's cultural inheritance . Ayurveda literally means "the knowledge of life". In Sanskrit, the word Ayurveda consists of the words āyu, meaning "life" and veda, meaning "knowledge" or "science". The growth of science depends upon research and there is no denying the fact that the understanding of the health care personnel, scientists and researchers today, in any given stream of science is because of research. The fundamental purpose of research is to know the truth and to benefit the society. In terms of medical research, it aims at knowing or re establishing the new molecules / drugs which are good for our patients. Ayurvedic medicines, the Department of AYUSH, Government of India has set up the Ayurvedic Pharmacopoeia Committee.(1) MATERIAL AND METHOD: Various Ayurvedic classic texts have been used for this study as source materials. Main Ayurvedic books used are Charak Samhita, Susruta Samhita, Astanga Samgrah, Astanga Hridya, Bhav Prakash, sharngdhar samhita, Yogratnkr, Swasthavritta samuchchya and available commentaries on it. Apart this relevant modern medical science books, various research/ review articles and websites are also been used for this.(2)

Vati(herbal tablet):

Vati and Gutika are the herbo- mineral preparation in the form of tablets or pills made of one or more drugs of plant or mineral origin. Kutajghan vati is official in Ayurvedic formulary of India and is mainly indicated in the management of Atisar, Pravahika .It is a polyherbal preaparation containing two ingredients namely Gokhru and punernava.(3) Medicines in the form of pills are Known as vati or gutika. These are made up of One or more drugs of plants, animal and miner known as vati or gutika. These are made up of one or more drugs of plants, animal and mineral origin Fine powder of medicinal drugs when mixed with water, swarasa, gomutra, godugdha and madhu etc. is prepared in various sizes 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.

Synonym: The synonyms of Vati described by Sarngadhara are Gutika, Vati, Modaka, Vatika, Pindi, Guda, Varti etc.(4)

Table No 1: Types of vatis based on size / shape

Sr.no.	Dosage forms	Shape	Example with use
1.	Gutika (pill)	Circular and flat	Eladi gutika, Used in various kidney ailments
2.	Vati	Circular mass	Sarpgandha vati, Used in hypertension
3.	Varti	Circular mass	Chandrodaya vati,

			Use to treat contract growth of eye
4.	Vataka	Big circular mass	Manasamitra vataka Used in psychosomatic illness

History of vati:

Vati (tablet dosage form) is an important drug delivery system in Ayurveda. Acharya Sharangadhar in 13th century AD was the 1st person who explained in detail about Bhaishajya kalpana (bhaishajya means medicine; Kalpana means dosage forms) in Sharangadhara Samhita. He explained various kalpanas and in one of these chapters he explained about vati. Vati kalpana is a pharmaceutical procedure in which the powder of raw drugs (herbal or herbo-minerals) triturated together with certain juices, infusions, decoctions or even honey and then are prepared in the form of vati or gutika. (5)

Characteristics: (6)

1. It must contain the specified dose within permissible limits.
2. It should be tough enough to resist normal handling from the time of manufacture to the time it reaches.
3. It should be disintegrated readily.
4. It is preferable to use micro fine powder for the preparation of Vati.

Diuretics: Diuretics are the drugs that increase the rate of urine flow and are used to adjust the volume and composition of body fluids in a variety of clinical situations including hypertension, heart failure, renal failure, nephrotic syndrome, glaucoma, hyperkalemia, bromide intoxication, anginal syndrome, epilepsy, migraine and cirrhosis. (7)

Table No 2. Classification of Diuretics: (8)

Sr.no	Class	Example
1.	Osmotic diuretics	Mannitol ,urea
2.	Carbonic anhydrases inhibitors	Acetazolamide
3.	Loop diuretics	Furosemide, Torsemide, Bumetanide, Ethacrynic acid .
4.	Thiazides -thiazide related agents	Chlorothiazide, hydrochlorothiazide, , , Bendroflumethiazide, Trichlormethiazide Indapamide. Quinethazone, metolozone, chlorthalidone
5.	Potassium-sparing agents -Pteridine derivatives -Aldosterone antagonist	Amiloride, Triamterene, Spironolactone, eplerenone.

Table No 3. Some herbal drug example is used as diuretics

Sr. no	Drug	Biological source	Chemical constituents	Medicinal uses
1.	Gokhru ⁹ <u>Synonyms</u> - puncture vine, bada gokhru, Palleru, Goats head	Dried ripens fruit of Tribulus terrestris. <u>Family</u> : Zygophyllaceae	Saponin, Glycoside, disogenin, Rusogenin, Gito genin Alkaloids Harmine, Harman Fixed oil, flavone.	As Diuretics Treatment of renal calculus As a pradisiac Treatment of Gout, Nephritis, kidney stones .
2.	Punernava ¹⁰ <u>Synonyms</u> - rkata punarnava, hog weed	Fresh or dried herb of Boerhaavia diffusa. <u>Family</u> : Nyctaginaceae	Punernavin, saponin, punernavosie, sterol, beta-sitosterol , alpha-2-sitosterol, palmatic acid, archidic acid, punernavoside, lignan.	As diuretics To support healthy heart, lungs and kidney function Reduce edema.
4.	Dandelion ¹¹ <u>Synonyms</u> - Yellow gowan, puff ball, blow ball, cankerwort,	is a flowering herbaceous perennial plant of the Taraxacum officinale <u>family</u> : Asteraceae	potential bioactive components such as Sesquiterpene lactones, taraxasterol (TS), taraxerol, chlorogenic acid (CGA), and CRA	As diuretics antioxidant properties, Help to improve immune system, Reduce edema.
5.	Fennel ¹² <u>Synonyms</u> -	Dried ripe fruit of Foeniculum vulgare. <u>Family</u> : Umbelliferae	Anethole, Limonene, fenchone, anisic acid, Estragol, volatile oils, curcumin, vitamin A and C,	Natural Diuretics, Stimulant, Rich in potassium,

	Saunf, sweet fennel,		Anisic aldehyde	Antioxidant.
6.	bottle gourd ¹³ <u>Synonyms-</u> Dudhi, lauki, white-flowered gourd,	Hard-shelled fruits of Lagenaria siceraria <u>Family:</u> Cucurbitaceae	It Contains tri terepenoide cucurbitacins B, D, G, H, Aerpene byonolic acid, flavone-C glycosides, lagenin Two sterols that is Fucosterol and campesterol.	Used as diuretic, Used to treat urinary tract infection, used for the treatment of jaundice, used as laxative.
7.	Nutgrass ¹⁴ <u>Synonyms-</u> ,Lavhala, coco-grass	It is Perennial, glossy-green grass, leaves arise from under ground rhizome of Cyperus rotundus. <u>Family:</u> Cyperaceae	It contains secondary metabolite that is alkaloids, flavonoids, tannins, glycosides and furochromones and many new sesquiterpenoid, Leaves Contain: Luteolin,	Diuretic as well as help in dysuria, helps in healing wounds and uterine contraction, Used to treat female disorder like premenstrual and breast cancer.
8	Garlic ¹⁵ <u>Synonyms-</u> Lasan, Allium sativum	It consists of ripe bulbs of Allium sativum. <u>Family:</u> Liliaceae	It contains allicin, allyl propyl disulphide and alliin, Ajoene is important constituent in garlic, Also contains proteins, fats, mucilage, and essential oil,	As a diuretic, Antihypertensive, Antioxidant, Expectorant, stimulant.
9	Elderberry ¹⁶ <u>Synonyms-</u> European elder, black elder,	It is flowering plants of Sambucus nigra L. <u>Family:</u> Caprifoliaceae	It contains polyphenols are chlorogenic acid, quercetin, rutin kaempferol-3-glucoside, Fatty acids, flavonoids	Diuretic, Used to increase urination, Used to boosting the immune system, Helps to Protect heart.
10	Roselle ¹⁷ <u>Synonyms</u> rozelle, red sorrel,	flowering plant of Hibiscus sabdariffa. <u>Family:</u> Malvaceae	It contains Ca, K, Na, Mg, vitamin C and calcium oxalate Chlorogenic acid, caffeic acid, gallic acid, catechin, rutin, benzoic acid,	Diuretic, Antimicrobial agent, mild laxative

General Procedure for vati(herbal tablet): (18)

- Take a dried plant of drug.
- Prepare finely power their made into bhasma.
- Power drug and bhasma are put into the mortar and grounded.
- Other power ingredient are added grounded to a soft paste with the prescribed fluids.
- In case more then are liquid they are use is succession.
- Vati are then made by its mixture by rolling the mixture on finger tips.
- To determine the final stage of the formulation.
- Before making pills it's should not stick to the finger when rolled.
- Weight the pills are dried for handing and moisture removal.

Standardization: (19)

1. Organoleptic parameters- colour, odour, Taste
2. Total sugar
3. Reducing sugar test
4. Particle size
5. Identification -Microscopy, HPLC, TLC
6. Test for heavy metal and toxins
7. Microbial contamination
8. Pesticides residue.
9. phytochemicals assessment

Physical evaluation:

1. PH- ²⁰ Weigh about 10 g of powdered drug was dissolved into 100 ml distilled water and filtrate was used for determining of pH using pH meter.

2. Ash value- ²¹ There are four different methods Which measure the ash.

- **Total Ash-**

The ground drug (2g) is incinerated in a silica Crucible at a temperature not exceeding 450°C until Free from carbon. It is then cooled and weighed to Get the total ash content.

- **Acid-Insoluble Ash-** ²²

Ash is boiled with 25 ml dilute HCL for 5 min. The Insoluble matter collected on an ash less filter Paper, washed with hot water and ignited to constant Weight. The percentage Of acid-insoluble ash with reference to the Air-dried drug was calculated.

- **Water Soluble Ash**-²³

Ash is dissolved in distilled water and the insoluble Part collected on an ash less filter paper and ignited At 450°C to a constant weight. By subtracting the Weight of insoluble part from that of the ash, the Weight of soluble part of ash is obtained.

- **3.Determination of loss on drying**-²⁴

An accurately weighed 5g of powder was taken in a tarred evaporating dish. The crude drug was then heated at 105°C in an oven for 3 hours. The drying and weighing was continued at half an hour interval until difference between two successive weighing corresponded. The sample was calculated with reference to the air dried powdered drug material.

Pharmaceutical parameters :

1.Friability test-²⁵ A set of vati is weighed and placed in the apparatus, where they will be subjected to rolling and repeated shocks as They fall 6 inches in each rotation. The vati are weighed after 4 minutes of therapy or 100 revolutions, and the weight Is compared to the initial weight.

2.Determination uniformity in weight -²⁶ To determine the uniformity of weight of vati, twenty vati are chosen at random and weighed separately in a Precision weighing balance. The average weight of each vati then calculating dividing the total weight of 20 vati by 20 in each group. The highest weight, Lowest weight and average weight of each Group of vati are recorded.

3.Disintegration Time Test-²⁷ for vati the first important step towards drug dissolution is a breakdown of the vati into primary powder particles, a process known as disintegration. The apparatus consists of a basket-rack assembly containing six open-ended transparent tubes held vertically upon a 10-mesh stainless steel wire screen. During testing, a vati is placed in each of the basket's six tubes, and through a mechanical device, the basket is raised and lowered in a bath of fluid at 30 to 32 cycles per minute for 15 minutes.

4.Determination of Hardness-²⁸ Hardness of a vati can be measured by using Monsanto or Pfizer tablet hardness testers. We have made the use of Monsanto hardness tester.

Conclusion :

The current review is provided on overview of ayurvedic herbal drug or formulation are used as diuretic treatment of renal disease and disorder and knowledge of ayurvedic herbal diuretic drug in the from of herbal formulation Herbal medicine are widely used as biological and medical activities as first line therapy of major disease this review included in a history of Vati , characteristics , Diuretic, classification of diuretic, some herbal drug is used as diuretic and it's characteristics, method of preparation of Vati and it's standardization parameters . This review concluded that the world wide trend toward the utilization natural plant remedies create the enormous need for information about properties and uses of herbal diuretic plant and Ayurvedic formulation .

Reference:

1. Dua Pradeep, Dua Pamila, "Research in ayurveda: challenges and way forward," ijr 3(1), Jan-Feb 2012, pp.23.
2. Dr. Dhanraj Nagar, Dr. Ramavtar Sharma and Jayant Nagar, "Role of ayurveda in public health: a research article," wjpr, Vol 8, Issue 9, 2019.
3. Tejas kakade, Sadhana Misar Wajpeyi, "Physio-chemical "Physio-chemical analysis of Kutajghan vati," ijr June 2019, volume 6, issue 2, pp.12.
4. Mukesh Ananta Chaudhari, "Review of vati kalpana w.s.r to Sharangdhar okta vati kalpana," international ayurvedic medical journal, Volume 5, issue 12, december, 2017, pp.4469.
5. <https://www.slideshare.net/murthybontha/vatigutika-preparation-and-standardization>.
6. Kanchan Pal , Anjana Dwivedi and Rajeev Narayan Bilas, " A [6] Kanchan Pal , Anjana Dwivedi and Rajeev Narayan Bilas, " A Critical review popular ayurvedic dosage form Vati (tablet) and its analytical evaluation," World Journal of Advanced Research and reviews 2022, 13(03), 271–276.
7. N. Sirisha, M Sreenivasulu, K. Sangeeta , G. Swarna Latha, A. Lakshmi Devi and C. Madhusudhana Chetty, "Review on herbal Diuretics," Research J. Pharm. And Tech. 4(3): March 2011, pp.335.
8. Koushik Nandan Dutta*, Purbajit Chetia, Sunita Lahkar, Sumit Das, "Herbal plants used as diuretics: a comprehensive review," Journal of Pharmaceutical, Chemical and Biological Sciences (JPCBS), May 2014; 2(1): 27-32.
9. Pooja Deshpande, Suman Shrivastava, S.J. Daharwal, "A review on Plant profile, standardization method and pharmacological activities of Tribulus terrestris (gokhru)," Journal of Ravishankar University–B, 31 (1), (2018), pp.40-45.
10. Dr. Mayukh Sharma, Dr. Priya K. Pillai, Dr. Swathi K.S., Dr. Shyamveer Ghuraiya, "A review of boerhavia diffusa (punarnava) as per Ancient aspect & recent advantages with pharmacotherapeutic Properties" Elementary Education Online, 2020; Vol 19 (Issue 4): pp.3262-3265.
11. Di Napoli and Pietro Zucchetti, "A comprehensive review of the Benefits of Taraxacum officinale on human health," Bulletin of the National Research Centre, (2021) 45:110, pp.1-7.
12. Shamkant B. Badgujar, Vainav V. Patel, and Atmaram H. Bandivdekar, "Foeniculum vulgare mill: a review of its botany, Phytochemistry, pharmacology, contemporary application, and Toxicology," BioMed Research International, Volume 2014, pp.1-33.
13. Parle Milind , Kaur Satbir, "Review article is bottle gourd a natural Guard," IRJP 2 (6) 2011, pp.13-17.
14. Nalini sofia. H, Thomas M. Walter, S. Merish, M. Tamizhamuthu, "Overview of nut grass (cyperus rotundus) with special reference to AYUSH," World Journal of Pharmaceutical Research, Volume 3, Issue 6, pp.1459-1471.
15. C.V. Pantoja, L.Ch. Chiang, B.C. Norris, J.B. Concha, "Diuretic, Natriuretic and hypotensive effects produced by Allium sativum (garlic) In anaesthetized dogs," journal of ethnopharmacology , volume 31, issue 3, march 1991, pp.325-331.
16. Neha Pathak, Diet & weight management elderberry, webmd Editorial contributors, september 21, 2020.
17. Yusni Yusni and Firdalena Meutia, "Research article action Mechanism of rosella (hibiscus sabdariffa L.) used to treat metabolic syndrome in elderly women," Evidence-Based Complementary and Alternative Medicine Volume 2020, pp.1-6.

18. Purnendu Panda , S.K.Meher , Banamali Das , G.C.Bhuina, "Tablet and tableting in ayurveda (vati kalpana)- a review," IAMJ: Volume 4; Issue 07; July- 2016, pp.1218-1221.
19. Rohit Kumar Bijauliya , Shashi Alok, Dilip Kumar Chanchal and Mayank Kumar, "A comprehensive review on standardization of herbal Drugs," IJPSR (2017), Volume 8, Issue 9, pp.3663-3677.
20. Shelar M. K, Gawade. V. S, Kanhegaonkar S. A, "Standardization Of herbomineral preparation – a review," Pharmaceutical Resonance 2021 Vol. 3 – Issue 2, pp.69.
21. M Elamathi and M H Muhammad Ilyas, "Phytochemical Constituents, fluorescence analysis and proximate composition of Cephalaria indica naud.Unripe fruits," IJCP, Vol. 03, Issue 09, pp.2.
22. Shivani Chauhan, Vikrant Pundir , Ashish Kr Sharma, "Pharmacopeial standardization of mahasudarshan churna: a polyherbal Formulation," Journal of Medicinal Plants Studies Year: 2013 Volume: 1, Issue: 2, pp.15.
23. Rohitash Gurjar, Sanjeev Sharma, Narinder Singh, "Comparative physio-chemical analysis of snuhi kshara as and apamarga kshara – an experiment study," IAMJ June 2021, pp.1172.
24. Princy Agarwal, Rajat Vaishnav and Mahendra Singh Ranawat, "Evaluation of quality parameters of three different marketed brands of yogaraj guggulu vati: a polyherbal formulation," Biomedical Journal of Scientific & Technical Research, Volume 6- Issue 4: 2018, pp.5356.
25. Hemraj L. Pawar , Roshan R. Ghatmale , Prof. R.T. Mogal, "Formulation development of Film coated ivabradine tablet," IJCRT, Volume 10, Issue 5 May 2022, pp.158.
26. Tiwari Deepak Kumar, "A critical review on vati kalpana and it's analytical parameters," IJAAR, volume IV, issue X, sep – Oct 2020, pp.1088.
27. Gunjan Sharma , Yadevendra Yadav , Priyanka Rani , Arun Kumar , Hemraj Singh Jardhari, "Pharmaceutical and analytical study of Sarivadi vati: an herbomineral formulation for karna roga," Int.J.Res. Ayurveda Pharm.13 (4), 2022,pp.3.
28. Princy Agarwal, Rajat Vaishnav, Anju Goyal, "Evaluation of Quality parameters of three different marketed brands of arogya vardhini Vati: a herbo-mineral formulation," iajpr, Vol 8 Issue 05, 2018,pp.391.