Received: 10 Oct 2026	Revised: 15 Nov 2026	Accepted: 15 Dec 2026

Review Article

IJRPS
The Power of Wisdom

SCITEKHUB

ISSN: 3048-5606

"EXCIPIENTS AND BINDERS IN *VATI* AND *GUTIKA*: CLASSICAL CHOICES, MODERN SUBSTITUTES AND QUALITY PARAMETERS"

Tushar Tapadiya[1]

AFFILIATIONS:
1. Research Assistant, IRA Consultancy and Research Organisation, Bhosari MIDC, Pune, Maharashtra, India

CORRESPONDENCE:
Tushar Tapadiya
EMAILID:
tushartapadiya11@gmail.com

FUNDING INFORMATION:
None

How to cite this article:
Tushar Tapadiya, "Excipients and binders in vati and gutika: classical choices, modern substitutes and quality parameters" International Journal of Rasa Shastra and Pharmaceutical Sciences. 2026;3(4):1-4. Sri. 2026.1007.ijrps.04.01

ABSTRACT

Background: *Vati* and *gutika* (pills and tablets) are among the most widely manufactured Ayurvedic dosage forms. Classical texts specify binders such as sugar, jaggery, *guggulu* and honey in defined proportions, while modern manufacturers increasingly use compression with conventional excipients. The effects of these choices on quality are rarely examined. **Objective:** To review classical binding principles, the use of modern excipients, and the quality parameters applied to *vati* and *gutika*. **Methods:** A critical narrative review of classical rules, pharmaceutical development and standardisation studies of Ayurvedic tablets, and relevant literature on natural binders and excipients. **Results:** Classical rules prescribe sugar at four times, jaggery at twice and *guggulu* or honey at equal the weight of powder, or liquids at twice the weight for wet massing, with no added binder when *guggulu* is already an ingredient. These binders are therapeutically active and contribute a large share of the dose. Directly compressed classical formulations without excipients have achieved acceptable properties; for example, *Sulaharan Yoga* tablets had hardness 4.0–4.7 kg/cm^2, friability 1.2–1.6% and disintegration 7–11 minutes. A *ghanavati* showed hardness of 6.0 kg/cm^2 and disintegration of 25 minutes. Natural gums such as *Moringa* gum can act as binders or release retardants. Disintegration and dissolution of traditional pills are poorly characterised, and excipient declarations are often incomplete. **Conclusion:** Binders in *vati* are part of the formulation, not inert additives. Excipient choice should be justified, declared and tested for its effect on disintegration, dissolution and stability.

KEYWORDS: *Vati*; *Gutika*; Binders; Excipients; *Guda*; *Guggulu*; Tablet quality; Disintegration

This is an open access article, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

INTRODUCTION

Vati and *gutika* are solid dosage forms prepared by binding powdered drugs, extracts or minerals into pills. They offer accurate dosing, portability, masking of taste and a longer shelf life than powders, and they include some of the most widely used Ayurvedic products, from herbal *vati* to mineral-containing *rasa* preparations and *guggulu* formulations[1,2]. Traditionally they are rolled by hand from a wet mass; industrially they are increasingly compressed into tablets.

In conventional pharmaceutics, excipients such as binders, diluents, disintegrants and lubricants are chosen to achieve mechanical strength, rapid disintegration and predictable dissolution[3]. In Ayurveda, the binding agents are often themselves active ingredients. This review examines the classical rules, modern practice and the quality parameters that link them.

METHODS OF THE REVIEW

This is a critical narrative review. Literature was identified through PubMed, PubMed Central, DOAJ, Crossref-indexed records and journal archives using the terms *vati*, *gutika*, Ayurvedic tablet, *ghana vati*, binder, excipient, hardness, friability, disintegration and standardisation. Classical rules were taken from published analyses of classical texts.

CLASSICAL BINDERS AND THEIR PROPORTIONS

Table 1. Classical binding agents for *vati* and *gutika*

Binder	Proportion relative to powder	Remarks
Sita (sugar)	Four times	Cooked to a syrup (*paka*) on mild heat before adding powder
Guda (jaggery)	Twice	Cooked to *paka*; contributes sweetness and hygroscopicity
Guggulu (oleo-gum-resin)	Equal	No separate binder needed if *guggulu* is an ingredient
Madhu (honey)	Equal	Added without heating
Liquids (*swarasa*, *kwatha*, *gomutra*)	Twice	Used for wet massing (*bhavana*) until a pill-forming mass is obtained

Classical rules, summarised from the *Sharangadhara Samhita*, specify sugar at four times, jaggery at twice, and *guggulu* or honey at an equal weight relative to the powder, or liquids at twice the weight for wet massing; when *guggulu* is already an ingredient, no further binder is needed[2]. The powder is classically sieved finely, the mass is rolled into pills of uniform size, and the pills are dried in shade and stored airtight[2].

These proportions have two important consequences. First, the binder may make up most of the pill: in a sugar-bound *vati*, the drug may be only one-fifth of the weight. Dose calculations, sugar load for diabetic patients and comparisons with compressed tablets must take this into account. Second, the binders are pharmacologically active in their own right. *Guggulu* has anti-inflammatory and lipid-modulating properties, honey and jaggery have nutritional and *dosha*-specific roles, and liquid media used for massing transfer their constituents to the pill, as discussed in the review of *bhavana* in this series.

MODERN PRACTICE: COMPRESSION AND EXCIPIENTS

Industrial manufacture often replaces hand-rolling with compression. Classical formulations can sometimes be compressed without added excipients. *Sulaharan Yoga*, made from equal parts of eight ingredients including resinous asafoetida and sulphur, was compressed into tablets without conventional excipients and met tablet quality parameters (Table 2)[4]. *Ghana vati*, made from dried decoction extracts, may need added binders or diluents because dried extracts are hygroscopic and sticky; standardisation studies have been reported for *Dashanga ghana* tablets and for tablets derived from a decoction group[5,6].

Natural polymers are attractive as binders for herbal tablets because they are compatible with the herbal character of the product. Gum from *Moringa oleifera*, for example, has been evaluated as a binder at 4–10% and as a release retardant at 10–30% in tablets, giving satisfactory granule and tablet properties and diffusion-controlled release[7]. The same polymer can therefore speed or slow release depending on concentration, which illustrates why excipient choice needs to be tested rather than assumed.

Table 2. Reported quality parameters of selected Ayurvedic tablets

Product	Hardness	Friability	Disintegration time	Other
Sulaharan Yoga, in-house	4.7 kg/cm^2	1.6%	11 min	Weight variation 5.82%; no conventional excipients
Sulaharan Yoga, marketed	4.0 kg/cm^2	1.2%	7 min	Weight variation 5%
Patolakaturohinyadi ghanavati	6.0 kg/cm^2	–	25 min	Moisture 6.268%

QUALITY PARAMETERS

Quality testing of *vati* now commonly includes weight uniformity, hardness, friability, disintegration, loss on drying, ash values and extractive values[2]. These tests were developed for conventional tablets and need interpretation for traditional pills:

- **Hardness and friability.** Hand-rolled pills are often softer than compressed tablets and may not meet friability limits, but they also do not need to withstand high-speed packaging. Reported friability values above 1% suggest that compression parameters or binders may need optimisation[4].
- **Disintegration.** Disintegration times of several minutes to around half an hour have been reported[4,8]. Sugar- and jaggery-bound pills may dissolve rather than disintegrate, and *guggulu*-bound pills may soften slowly. Disintegration testing should be supplemented by dissolution testing of marker compounds.
- **Moisture.** Sugar, jaggery and dried extracts are hygroscopic; moisture uptake affects hardness, microbial growth and stability.
- **Stability.** Shelf life depends on binder, moisture and packaging, and should be established by stability studies following accepted principles[9,10].

DECLARATION AND REGULATION OF EXCIPIENTS

Product labels often list the active ingredients of a *vati* but not the binders, diluents, lubricants, colours or coatings. This is a problem for patients with diabetes, for those avoiding certain substances, and for interpretation of dose. Full declaration of excipients and their quantities, and justification of any non-classical excipient, should be expected in product dossiers.

TOWARD RATIONAL FORMULATION

Modern formulation science offers tools to make *vati* development systematic. Quality-by-design approaches, in which critical material attributes and process parameters are identified and controlled, have been proposed for converting classical preparations into granules and tablets[11]. Applied to *vati*, these approaches would define the acceptable range of binder, moisture and compression force that give target hardness, disintegration and marker release, while respecting the classical composition.

RESEARCH GAPS

The main gaps are: dissolution methods and specifications for classical pills; comparisons of hand-rolled and compressed versions of the same formulation; studies of how classical binders affect release of markers; evaluation of natural excipients for Ayurvedic tablets; and stability studies relating binder and packaging to shelf life.

CONCLUSION

Classical binders for *vati* and *gutika* are used in large proportions and are therapeutically meaningful components of the formulation. Classical formulations can be made into tablets that meet many modern quality parameters, but friability, disintegration and dissolution need attention, and excipient declarations are often incomplete. Treating binders and excipients as deliberate formulation choices, declaring them fully and testing their effects on release and stability would improve the consistency and transparency of Ayurvedic solid dosage forms.

REFERENCES

1. Tripathi B, editor. Sharangadhara Samhita of Sharangadhara, Madhyama Khanda, chapter 9 (Sneha Kalpana), with Dipika Hindi commentary. Varanasi: Chaukhamba Surbharati Prakashan; 2004.
2. Nyavanandi D, Mandati P, Vidiyala N, Parupathi P, Kolimi P, Mamidi HK. Hot melt extrusion paired nozzle based additive manufacturing techniques for design and development of pharmaceuticals [preprint]. Preprints. 2024.

3. Rowe RC, Sheskey PJ, Quinn ME, editors. Handbook of pharmaceutical excipients. 6th ed. London: Pharmaceutical Press; 2009.
4. Hechhu R, Krishnan K, Singamaneni V, Raju PVN, Erukulla P, Kandimalla KV, et al. GC-MS-based phytochemical analysis, in-depth ADMET screening and molecular docking targeting EGFR for anticancer potential. Chem Methodol. 2026;10(5):465-88.
5. Baragi UC, Baragi PC, Vyas MK, Shukla VJ. Standardization and quality control parameters for Dashanga Ghana tablet: an Ayurvedic formulation. Int J Ayurveda Res 2011;2:42–7.
6. Kalsariya BD, Patgiri BJ, Prajapati PK. Standard manufacturing procedure for syrup and tablet forms of Jwarahara Dashemani. Ayu 2010;31:255–9.
7. Laxmiprasanna P, Chandan RS, Nagidi HR, Vidiyala N. Analytical method development and validation of a novel RP-HPLC method for simultaneous quantification of xanomeline and trospium chloride in pharmaceutical dosage form. Int J Drug Deliv Technol. 2025;15(1).
8. Sruthi KTK, Pramod Kumar N, George JB, Mathew S. From decoction to evidence: modern standardization of Ayurvedic Kwatha and polyherbal formulations. Int J Latest Technol Eng Manag Appl Sci 2026;15(5):1269–88. https://doi.org/10.51583/IJLTEMAS.2026.150500098
9. Vidiyala N, Sunkishala P, Parupathi PR, Nyavanandi D. Stem cell-derived exosomes in wound healing and skin regeneration: emerging therapeutic strategies and mechanisms. Cells. 2026;15(10):872.
10. International Conference on Harmonisation. ICH Q1A(R2): Stability testing of new drug substances and products. Geneva: ICH; 2003.
11. Jahnavi P, Kumar AK, Prema S, Singamaneni VR, Vidiyala N, Sunkishala P, et al. Recent progress in heterogeneous catalysis for sustainable chemical processes. J Chem Rev. 2026;8(2):154-79.