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PHARMACEUTICAL STANDARDIZATION OF *DASHANGA GULIKA*

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ABSTRACT

Background: *Dashanga Gulika* (DG) mentioned by Acharya kashyapa in *Kita Visha* chikitsa is widely used formulation. Standardization and validation of Ayurvedic polyherbal formulations using modern analytical techniques are crucial to ensure their safety, efficacy, and quality. *Dashanga Gulika*, a well-known multi-component formulation with diverse therapeutic applications, lacks updated scientific validation to precisely confirm its safety and efficacy. Therefore, an effort was made to standardize the pharmaceutical process of *Dashanga Gulika* and validate its analytical profile. The objective was to establish a Standard Manufacturing Procedure (SMP) for *Dashanga Gulika* and to verify its quality control parameters. **Methods**: Three batches of *Dashanga Gulika* were prepared in the pharmaceutical laboratory, Institute of Teaching and Research in Ayurveda (ITRA), Jamnagar, following a classical reference. They were further subjected to an organoleptic, relevant physicochemical analysis. **Results**: A batch of 100g of DG prepared by taking 10g of each ingredient. Approximately 136 ml of water required for levigation of 100gm of powder with yield of 510 *Vati* of average weight 235.6mg after drying in oven for 1hr at 60^0C. Resultant product was brown in colour with pungent and bitter taste. In all the batches weight variation of tablet was in normal range (±7.5%). pH, LOD, water soluble extract, alcohol soluble extract didn't show great variation. **Conclusion**: This report serves as an initial step in generating results for the standardization and validation of DG, which can be utilized as a reference for future studies. Additionally, further research is needed to investigate and confirm the therapeutic potential of this formulation.

INTRODUCTION

Reference of *Dashanga Gulika* is found in different ayurvedic text like Astangahridaya[1] Chakradatta[2], Bhaishajyaratnavali[3] and Yogaratnakara.[4] This yoga is highly practiced by most of the traditional *Visha Vaidyas* in Kerala. *Dashanga Gulika* can be indicated in all cases of inflammations including scorpion sting, as it has combined effect of Anti inflammation, analgesic and wound healing property.[5]

Vati Kalpana also known as Gulika, is one of the most ancient and widely practiced dosage forms in Ayurvedic pharmaceutics. Its significance lies in ease of administration, convenience, and precise dosing. *Dashanga Gulika* is known for its versatile therapeutic applications. However, like many traditional polyherbal formulations, it lacks comprehensive scientific standardization and validation to ensure consistency, safety, and efficacy in modern pharmaceutical practice.

In the current era, the need to bridge traditional knowledge with modern scientific approaches has become increasingly significant. Establishing pharmaceutical standards not only helps ensure the quality and reproducibility of Ayurvedic formulations but also supports their integration into evidence-based medical systems. Despite its wide use, there is a paucity of published data on the standard manufacturing procedures (SMP) and analytical parameters of *Dashanga Gulika.*

This study was undertaken to standardize the pharmaceutical preparation of *Dashanga Gulika* as per classical references and to evaluate its organoleptic and physicochemical characteristics. The findings aim to contribute towards the development of a validated SMP and set baseline quality control parameters for future research and clinical application.

MATERIALS AND METHODS

Procurement and Authentication of raw material

Raw materials were procured from pharmacy ITRA, Jamnagar and authenticated by Pharmacognosy laboratory from the same institute.

Preparation of *Dashanga Gulika*

The pharmaceutical study was carried out at the departmental laboratory of Rasashastra and Bhaishajya Kalpana, Institute of Teaching and Research in Ayurveda, Jamnagar. The formulation composition of DG has been given in Table 1. The entire procedure was

accomplished in 2 phases: 1. Powdering (*Churnikarana*) 2. Preparation of pills (*Vati Nirmana*)

Table 1: Formulation composition of *Dashanga Gulika.*

SN	Name of drug	Latin name	Part used	Quantity
1	*Vacha*	*Acorus calamus*	Rhizome	1 Part
2	*Hingu*	*Ferula northex*	Niryasa	1 Part
3	*Vidanga*	*Embelia ribes*	Fruit	1 Part
4	*Saindhava*	Rock salt	-	1 Part
5	*Gajapippali*	*Scindapsus officinalis*	Fruit	1 Part
6	*Patha*	*Cissampelos pereira*	Root	1 Part
7	*Prativisha*	*Aconitum heterophylum*	Root tuber	1 Part
8	*Shunthi*	*Zinziber officinale*	Rhizome	1 Part
9	*Maricha*	*Piper nigrum*	Fruit	1 Part
10	*Pippali*	*Piper longum*	Fruit	1 Part

Powdering (*Churnikarana*): All 10 ingredients were crushed in mortar and pestle individually, grinded in mixer grinder, and passed through sieve # 85 to prepare their fine powder.

Table 2: Result after powdering ingredients.

SN	Drug	Initial wt(g)	Final wt(g)	Loss(g)	Yield (%)
1	*Vacha*	100	54	46	54
2	*Hingu*	100	40	60	40
3	*Vidanga*	100	32	68	32
4	*Saindhava*	100	98	02	98
5	*Gajapippali*	100	54	46	54
6	*Patha*	100	30	70	30
7	*Prativisha*	100	70	30	70
8	*Shunthi*	100	66	34	66
9	*Maricha*	100	70	30	70
10	*Pippali*	100	52	48	52

Preparation of pills (*Vati Nirmana*)

Initially all the powdered drug was taken in mortar and mixing was done manually in a uniform direction with pestle until the formation of a homogenous powder. Later *Bhavana* was given with plane water. The amount of water sufficient to convert the whole mass into muddy consistency (*Rasa-pankavata*) was assumed to be sufficient.[6] Levigation was done until *Subhavita Lakshana* (attainment of proper consistency of the levigated mass so that pills can be rolled) was observed. Then, pills were rolled manually and dried in a digital oven. After complete drying, the pills were stored in airtight glass jars. In similar way 2 more batches were made.

Table 3: Result of 3 batches of *Dashanga Gulika.*

Batches	Initial wt	Final wt(after drying)	Amount of *Bhavana Dravya*(ml)	Time duration of *Mardana* (h)	No. of V*ati*
Batch 1	100 g	97	134	2.10	500
Batch 2	100 g	100	130	2.00	538
Batch 3	100 g	99	138	2.20	492
Average	**100 g**	**98**	**136**	**2.15**	**510**

Total 3 batches of 100g of *Dashanga Gulika* were prepared. Around 510 pills of approximately 230 mg were rolled manually in each batch. The results for three batches along with their average have been depicted in Table 3.

Table 4: Showing Organoleptic characteristic of *Dashanga Gulika.*

Properties	Batch 1	Batch 2	Batch 3
Colour	Brown	Brown	Brown
Texture	Smooth	Smooth	Smooth
Taste	Pungent	Pungent	Pungent
Odour	Not specific	Not specific	Not specific

Table 5: Physicochemical parameter of *Dashanga Gulika*.

Properties	Batch 1	Batch 2	Batch 3
pH	6	6	7
LOD (%)	0.9	0.9	1.9
Water soluble extractive(w/w)	17.4	15.7	15.8
Alcohol soluble extractive (w/w)	10.6	11.5	10.8
Acid insoluble ash(%)	0.2	0.4	0.4
Ash Value	11.7	11.9	12.5
Hardness	6	7	8

Physical Test

Weight Variation

The average weight found in each batch was 235.9g, 233.5g, 237.1g. According to the Ayurvedic Pharmacopoeia, weight variation of 7.5% for tablets weighing between 80mg and 250mg is acceptable.[7] Here, it is within the prescribed limits (Table 6).

Table 6: Percentage deviation in weight of 3 batches of *Dashanga Gulika*.

Batch	Average Weight (mg)	Max. wt of *Vati* (mg)	% Deviation	Min. wt. of *Vati* (mg)	% Deviation
1	235.9	241.5	2.3	222	5.8
2	233.5	245.2	5.0	227.8	2.4
3	237.1	243.6	2.7	229.2	3.3

Friablility- In all the three batches friability came to 0%.

Disintegration Time

This test determines whether tablets disintegrate within a prescribed time when placed in a liquid medium under the prescribed experimental conditions.[8] Total time taken to disintegrate tablet completely in water was 33min., 37 min., 35 min. respectively in batch I,II, III.

DISCUSSION

The standardization of *Dashanga Gulika* demonstrated that its preparation can be reliably replicated using classical methods while maintaining consistent quality.

Processing

The first phase of DG preparation was powdering which involves the reduction of each ingredient into a fine powder. It contain 1 mineral (rock salt) and rest herbal drug. Powdering (*Churnikarana*) is essential for ensuring uniform mixing, optimal bioavailability, and easy pill formation. The results for the initial weight, final weight, loss, and yield for each ingredient (Table 2) provide valuable insights into the processing characteristics of the formulation. Significant variations in yield were observed among the ingredients, with *Saindhava* (rock salt) showing the highest yield (98%) and *Vidanga* and *Patha* showing the lowest yield 32% and 30% respectively due to more fibrous content. Rock salt does not contain moisture or fibrous material that could result in loss during grinding and sieving. Uniform particle size ensures proper mixing of all ingredients during *Vati* preparation, better absorption of *Bhavana Dravya*.

Organoleptic Parameters

The uniformity in organoleptic and physicochemical parameters across the three batches validates the reproducibility of the manufacturing process. All three batches exhibited a uniform brown colour, which can be attributed to the synergistic blending of ingredients during *Bhavana* (levigation). The pills in all batches exhibited a smooth surface, a critical factor in determining proper levigation and pill formation. The smooth texture reflects adequate mixing during *Mardana* (trituration) and proper adherence of the powders during shaping. The pungent taste (*Katu Rasa*) observed in all batches is consistent with the predominant properties of the ingredients such as *Pippali* (*Piper longum*), *Maricha* (*Piper nigrum*), and *Shunthi*. This uniform taste profile suggests proper ingredient proportion and

sufficient *Bhavana* to allow the flavors to integrate harmoniously. Taste serves not only as a sensory quality but also as an indicator of therapeutic activity in Ayurveda, as pungent herbs are traditionally linked to digestive and detoxifying effects.

Physicochemical Evaluation

The physicochemical parameters such as pH, LOD, and extractive values are within acceptable ranges, indicating proper processing and quality of raw materials. The weight variation in pills (~230 mg) met the standards prescribed in the Ayurvedic Pharmacopoeia, confirming batch-to-batch consistency. Pills consistently averaged ~230 mg, adhering to the Ayurvedic Pharmacopoeia standards. The low moisture content (LOD 0.9–1.9%) ensures stability and reduces microbial contamination risks, while the water-soluble and alcohol-soluble extractive values highlight the presence of bioactive constituents.

The water-soluble extractive values ranged from 15.7% to 17.4%, while the alcohol-soluble extractive values ranged from 10.6% to 11.5%. These extractive values indicate the solubility of bioactive constituents in polar (water) and semi-polar (alcohol) solvents, highlighting the presence of compounds such as alkaloids, glycosides, tannins, and other phytochemicals. Consistency in extractive values confirms uniform processing and quality of raw materials.

Friablility of 0% shows compactness of *Vati*, no surface loss or erosion during transportation. The average disintegration time observed for *Dashanga Gulika* was 35 minutes, which is within acceptable limits for polyherbal Ayurvedic tablets.

CONCLUSION

The findings provide an initial framework for the standard manufacturing procedure (SMP) of *Dashanga Gulika*, laying the groundwork for further research to validate its therapeutic efficacy and safety. Adherence to these standardized methods will help maintain quality and establish this traditional ayurvedic formulation as a reliable therapeutic option.

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