E-ISSN:2456-3110

Research Article

Trayushnadi Gutika

Check for updates

Journal of Ayurveda and Integrated Medical Sciences

2025 Volume 10 Number 2 FEBRUARY

Publisher

Maharshi Charaka Ayurveda

www.maharshicharaka.in

Pharmaceutical Standardization and Analytical Evaluation of different samples of Trayushnadi Gutika

Roy P[1*], Kumar Dwivedi P[2]

DOI:10.21760/jaims.10.2.12

[1*] Priyanka Roy, MD in Rasashastra and Bhajshajya Kalpana, Govt Ayurvedic College and Hospital, Patna, Bihar and Ayurvedic Medical Officer, APHC Sahebpur Kamal, Begusarai, Bihar, India.

[2] Prabhat Kumar Dwivedi, Professor, Dept of Rasashastra and Bhajshajya Kalpana, Govt Ayurvedic College and Hospital, Patna, Bihar, India.

Introduction: Ayurvedic pharmaceutics (Rasashastra) emphasizes the purification and formulation of mineral- and metal-based drugs to enhance therapeutic efficacy and bioavailability. Trayushnadi Gutika is a classical formulation requiring rigorous standardization for quality, safety, and efficacy. With increasing commercial demand and large-scale manufacturing, concerns arise regarding ingredient authenticity and pharmaceutical integrity. This study focuses on ensuring the standardization of Trayushnadi Gutika using traditional and modern analytical methods.

Methods: Pharmaceutico - analytical study of both sample of Trayushnadi Gutika and its ingredients were carried out at Nagarjuna Laboratory, Department of Rasashastra and Bhaishajya Kalpana, Government Ayurvedic College, Patna, Bihar. Raw materials were authenticated based on Grahya Lakshana (acceptable characteristics) from classical texts. Pharmaceutical processing techniques were evaluated to ensure uniformity in formulation. Physicochemical analysis, including organoleptic characteristics, pH, moisture content, and other relevant parameters, was performed to assess the quality of the final product.

Results: The analysis confirmed the authenticity and purity of raw materials used in Trayushnadi Gutika. Pharmaceutical processing evaluations indicated consistent formulation techniques across batches. Physicochemical assessments showed that the product met standard criteria for Ayurvedic formulations, ensuring therapeutic efficacy and stability.

Discussion: This study highlights the importance of maintaining raw material authenticity and uniform manufacturing processes to ensure the efficacy of Ayurvedic formulations. By integrating traditional standardization techniques with modern analytical methods, Trayushnadi Gutika can be produced with consistent quality and reliability. Strengthening pharmaceutical standardization practices will enhance confidence in Ayurvedic therapeutics and promote its broader acceptance.

Keywords: Ayurvedic pharmaceutics, Trayushnadi Gutika, Rasashastra, Pharmaceutical standardization, Physicochemical analysis, Ayurvedic drug formulation, Traditional medicine, Herbal standardization.

Corresponding Author

Priyanka Roy, MD in Rasashastra and Bhajshajya Kalpana, , Govt Ayurvedic College and Hospital, Patna, Bihar and Ayurvedic Medical Officer, APHC Sahebpur Kamal, Begusarai, Bihar, India.
Email: priyanka29.roy@gmail.com

How to Cite this Article

Roy P, Kumar Dwivedi P, Pharmaceutical Standardization and Analytical Evaluation of different samples of Trayushnadi Gutika. J Ayu Int Med Sci. 2025;10(2):78-90.
Available From
https://jaims.in/jaims/article/view/4306/

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2025-01-13	2025-01-23	2025-02-03	2025-02-13	2025-02-23

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nill	Yes	13.36	

Introduction

Rasashastra the unique Ayurvedic Pharmaceutics which deals with the preparation of drugs from metals, minerals, poisonous herbal drugs and animal products, these are rarely administered in their crude form.

And these are often combined with a number of substances through various pharmaceutical processes, which transform these to a convenient dosage form that can be administered and which is assimilable to human body. The most visible concepts of Bhaishajya Kalpana are due to its practical aspect, which not only deals the drug manufacturing but it also includes, the dispensing to the patient in most suitable form.

Through this the drugs are made into an easy palatable form, enhancing the therapeutic properties and nectarising form. Success of the treatment depends on the skillful preparation of the genuine drugs and their application against the diseased condition. Hence the skillful physician stands even superior to those who possess merely a theoretical knowledge of drugs.

The prime objective of pharmaceutical research is to produce a safe, effective and quality drug. Efficacy and safety depend solely on the quality of the drug. The quality of the pharmaceutical product depends not only on the care taken in its preparation, but also in confirming that the genuine raw material have been used and the material has been correctly processed.

Herbal drugs standardization in not new in Ayurveda. In the classics it is mentioned in a codified manner, i.e. *Grahya Lakshana*, method of collection etc. for raw drug, *Siddhi Lakshana* of final product are mentioned.

In ancient time, the Ayurvedic drug were prepared by the Physician himself with the help of experienced assistants in the small pharmacy attached to his clinic, so there was no doubt about authentication and quality.

But now a days, increasing demand of Ayurvedic drug resulting large scale manufacturing and wide distribution. Also, most of pharmaceutical industries using substitute drug instead of authentic drugs. Thus, to maintain the good quality, safety and efficacy of Ayurvedic drug,

We must collect the raw material as mentioned in our classics and maintains the uniformity in manufacturing process and final products. Classical text of Ayurveda have mentioned analytical techniques to understand the quality of the end product along with therapeutic properties of finished product.

These are mostly qualitative and subjective. Pharmaceutico - analytical study of both sample of *Trayushnadi Gutika*[1] and its ingredients were carried out at Nagarjuna Laboratory, Department of Rasashastra and Bhaishajya Kalpana, Government Ayurvedic College, Patna, Bihar.

Aim and Objectives

1. Standardization of Raw Materials - Identifying and verifying the authenticity and purity of ingredients used in *Trayushnadi Gutika.*
2. Pharmaceutical Processing Evaluation - Assessing the preparation techniques to ensure uniformity in formulation.
3. Physicochemical Analysis of *Trayushnadi Gutika* prepared by using different *Bhavana Dravya*

Materials and Methods

Pharmaceutical Study

Procurement of the raw drugs: The crude drugs required for the preparation of the *Trayushnadi Gutika* were purchased from the local market and were authenticated by the Department of Pharmacognosy of the Institute and Analytical tests were conducted at Arbro Pharmaceuticals Private Limited (Analytical Division), Kirti Nagar, New Delhi (Govt. Approved Test House).

Preparation of *Trayushnadi Gutika* comprised of following steps:

- **Step No.- 01:** Preparation of *Yavakuta Churna* of *Triphala*
- **Step No.- 02:** *Guggulu Shodhana*
- **Step No.- 03:** Preparation of *Trikatu Churna*
- **Step No.- 04:** Preparation of *Triphala Churna*
- **Step No.- 05:** Preparation of *Trayushnadi Gutika* sample-A (*Bhavana* with *Gokshur Kwatha*)
- **Step No.- 06:** Preparation of *Trayushnadi Gutika* sample-B (*Bhavana* with *Amalaki Swarasa*)

Analytical Study

1. Organoleptic character:

A) Appearance
b) Colour
c) Odour
d) Taste

2. Physico-chemical parameters:

A) Uniformity of weight**[2]**
b) Disintegration time**[3]**
c) Loss on drying**[4]**
d) Determination of pH**[5]**
e) Determination of Ash value**[6]**
f) Determination of acid insoluble ash**[7]**
g) Determination of water soluble extractive**[8]**
h) Determination of Alcohol soluble extractive**[9]**
i) Metal Analysis**[10]**
j) Total Bacterial Count**[11]**
k) Total Fungal Count**[11]**

Step No.- 01: Preparation of *Yavakuta Churna* of *Triphala*
Reference: Chakradatta.

Name of method: Hammering and Cutting.

Ingredients Required:

1. Haritaki (with seed) - 24.5 kg
2. Bibhitaki (with seed) - 24.5 kg
3. Amalaki (with seed) - 24.5 kg

Apparatus and Utensils: Hammer, Spatula, Weighing machine, Imamdusta, Stainless steel vessels, etc.

Procedure:

- First of all, all ingredients of *Triphala* (*Haritaki*, *Bibhitaki* and *Amalaki*) separately received from Depart. of Rasashastra & Bhaishajya Kalpana is cleaned carefully (remove unwanted materials).
- After the cleaning, the seeds were separated from the all drugs with the help of Hammer.
- After that all drugs are dried in sun light and then mixed in equal amount (which is minimum in quantity) and thereafter *Yavakuta Churna* are prepared with the help of Imamdusta.
- Then *Yavakuta Churna* was weighed and stored in container.
- *Yavakuta Churna* is used for preparation for *Triphala Kwatha*, which would be used for the *Shodhana* of *Guggulu*.

Precautions:

- Cleaning should be done carefully to minimize the loss happened during cleaning process.
- All material should be dry properly.
- *Yavakuta* preparation of *Triphala* should be done carefully to minimize the handling loss.

Results: The weight obtained of *Triphala Yavakuta Churna* after complete processing-

SN	Name of Herbs	Weight of Herbs (with seed)	Weight of Herbs (without seed)	Weight Loss	Weight of Herbs used in preparation	Residual Amount
1.	Haritaki	24.5 kg	11.500 kg	13.00 Kg	10.100 kg	1.400 kg
2.	Bibhitaka	24.5 kg	10.700 kg	13.8 Kg	10.100 kg	0.600 kg
3.	Amalaki	24.5 kg	10.100 kg	14.4 Kg	10.100 kg	0 kg
	Total	73.500	32.3 Kg	41.2kg	30.3 Kg	29.155 kg

Reason of weight loss:

- Some loss is due to presence of foreign materials which was eliminated during cleaning process.
- Maximum losses in herbs were due to seed extraction.
- Some losses due to handling mistake during Yavakuta Churna preparation.

Step No. 02: Preparation of *Triphala Kwatha* and *Guggulu Shodhana*73

Reference: Rasa Jala Nidhi Vol.-III, Chapter-VIII

दुग्धेवात्रिफलाक्काथेदोलायन्त्रविपाचित: ।
वाससागालितोग्राह्य: सर्वकर्मसुगुग्गुलु: ।। (रस जल निधि Vol.III,Chap.VIII)

Name of method – *Dolayantra Vidhi*

Materials required:

1. Ashuddha Guggulu - 10 kg
2. Triphala Yavakuta Churna - 20 kg
3.Water - 160 liters

Apparatus and Utensils: Weighing Machine, Imamdusta, Stainless Steel vessel, Spatula, Gas stove marking cloth, thermometer, measuring jar.

Procedure:

- *Triphala Yavakuta Churna* Firstly, previously prepared was taken in a stainless-steel vessel which is of 20 kg and then water was added 8 times of total weight of *Kwatha Dravyas*e., 180 liters and mixed it.

- After adding water to *Triphala Yavakuta Churna*, it is left for overnight.
- Then next day it is kept on gas stove on mild fire to make *Triphala Kwatha.*
- When one-fourth of the water content remained (i.e., 40 liters), then fire was stopped and *Kwatha* was removed from gas stove and was filtered with the help of marking cloth. Now, *Triphala Kwatha* is ready for *Guggulu Shodhana.*
- After that again *Triphala Kwatha* was taken in wide mouth utensils for *Guggulu Shodhana* and kept on gas stove on mild fire. Now, *Guggulu* is placed in a marking cloth and made a *Pottali* and hang it in utensils with the help of iron rod by the process of *Dolayantra-Vidhi.*
- Gradually *Guggulu* was melted and when completely melted then fire was stopped and *Pottali* was taken out from the utensils. Now, open the *Pottali* and remove foreign matter from this.
- Now again the mixture of *Guggulu* and *Kwatha* was kept on gas stove and dried on mild flame till *Shuddha Guggulu* was obtained.
- After that thoroughly dried in Sun light and weighed. The final weight of *Shodhit Guggulu* with *Ghana* was 6.5 kg.

Observations:

- *Triphala Yavakuta Churna* became soft when kept soaked for overnight.
- During process of *Triphala Kwatha Dravya* preparations, characteristics smell was observed.
- Gradually water loss was observed.
- The colour obtained of prepared *Triphala Kwatha* was dark brown.
- During *Guggulu Shodhana*
- Process, *Kwatha* colour becomes start to changing like deep brown in colour and characteristics smell of *Guggulu* comes out.
- Gradually *Kwatha* becomes thick in consistency and sticky.
- *Shuddha Guggulu* And lastly thick along with *Ghana* of *Triphala Kwatha* was obtained.

Precautions:

- All procedure done very carefully.
- Kwatha material should be *Yavakuta Churna* form only.
- Always mild fire should be used.
- *Pottali* must be dipping in *Kwatha* materials but not touch the base of utensils.
- During last stage of preparation of mixture of *Guggulu*, continuous stirring should be done to avoid sticking of *Guggulu* in base of utensils.
- Used utensils should be clean to avoid any contaminations.
- Marking cloth should be also cleaned which is used for filtration.

Results:

Weight of the Ashuddha Guggulu - 10 kg
Weight of the Shuddha Guggulu - 6.5 kg
Weight loss - 3.5 kg

Cause of weight loss:

- Maximum loss is due to presence of foreign materials which was eliminated after complete dissolution of *Ashuddha Guggulu.*
- Some loss when *Shuddha Guggulu* was stored in another container (stick on previous utensils).

Step No. 03: Preparation of Trikatu Churna

Reference: Chakradutta.

Name of method: Cleaning and Grinding.

Materials required:

1. Pippali -1.5 kg
2. Maricha - 1.5 kg
3. Shunthi -1.5 kg

Apparatus and Utensils: Imamdusta, Spatula, Sieve, Stainless steel vessels, Weighing machine, Grinder etc.

Procedure:

- Firstly collect 1.5 kg of each drug *Pippali*, *Maricha* and *Shunthi* separately in required size of utensils and remove unwanted material/foreign material. Then clean and wash carefully and leave it for drying in sun light.
- Then all ingredients were mixed and took into Imamdusta for making *Churna*.
- Then above *Churna* placed in Grinder for making fine *Churna* regarding particle size.

- At last prepared *Churna* was filtered through marking cloth and stored in air-tight container.

Observations:

- *Raw Trikatu* having some foreign materials and some defected piece. So, it was removed to obtained good quality product.
- The raw *Trikatu* convert into fine powder form.
- Obtained powder having characteristics smell and colour.

Precautions:

- The materials should be complete dry. Otherwise very difficult to grind and good quality Churna was obtained. Also loss may be more.
- The process of grinding should be done very carefully to minimize handling loss.
- Sieving through marking cloth should be done carefully. So that equal particle size of Churna was obtained.
- Stored container should be air-tight, clean and dry.

Results:

Total weight of Raw *Trikatu* - 4.500 kg
Total weight of *Trikatu Churna* - 3.200 kg
Total loss of *Trikatu* - 1.300 kg

Reason of weight loss:

- Most of loss occurred due to presence of foreign particle and defected materials.
- Some loss during grinding process.
- Some loss during sieving process because *Churna* was sieved from marking cloth to obtained equal particle size.

Step No. 04: Preparation of *Triphala Churna*

Reference: Chakradutta.

Materials required: Triphala Yavakuta Churna - 9.155 kg

Apparatus and Utensils: Imamdusta, Spatula, Sieve, Stainless steel vessels, Weighing machine, Grinder, Marking cloth, etc.

Procedure:

- Firstly previously prepared *Triphala Yavakuta Churna* was taken in a stainless steel vessel which is of 9.155 kg to made coarse powder.
- Then all ingredients took into Imamdusta for making *Churna*.
- Then above *Churna* placed in Grinder for making fine *Churna* regarding particle size.
- At last prepared *Churna* was filtered through marking cloth and procured fine *Churna* after Sieving.
- And stored in air-tight container.

Observations:

- The *Yavakuta Churna* converts into fine powder form.
- Obtained powder having characteristics smell and dark brown in colour.

Precautions:

- The materials should be complete dry. Otherwise very difficult to grind and good quality *Churna* was obtained. Also, loss may be more.
- The process of grinding should be done very carefully to minimize handling loss. Sieving through marking cloth should be done carefully. So that equal particle size of *Churna* was obtained.
- Stored container should be air-tight, clean and dry.

Results:

- Total weight of *Triphala Yavakuta Churna* - 9.155 kg
- Total weight of *Triphala Churna* - 6.300 kg
- Total weight loss of *Triphala Yavakuta Churna* - 2.855 kg

Reason of weight loss:

- First loss occurred during process of drying of *Yavakuta Churna* form because it was taken from Step No.-1.
- Some loss during grinding process.
- More loss during sieving process because *Churna* was sieved from marking cloth to obtained equal particle size.

Step No. 05: Preparation of *Trayushnadi Gutika* sample-A (*Bhavana* with *Gokshur Kwatha*)

Reference: *Chakradatta Pramehadhikar*

Name of method: *Guggulu Kalpana*

Materials required:

A. All materials are taken from previous practical

1. Trikatu Churna - 1.425 kg
2. Triphala Churna - 1.425 kg
3. Shuddha Guggulu - 2.850 kg
4. Gokshur (for *Kwatha* preparation) - 2.5 kg

B. Water as per requirement.

Apparatus and Utensils: Mortar and Pestle, Spatula, Sieve, Stainless steel vessels, Gas stove, Marking cloth, etc.

Procedure: The whole procedure could be divided into two steps-

Phase 1: Preparation of *Gokshur Kwatha*

Procedure:

- Firstly, whole *Gokshur* was taken in a stainless steel vessel which is of 2.5 kg and then separate foreign materials and placed in Imamdusta for *Yavakuta Churna*
- After that water was added 8 times of total weight of *Kwatha Dravyas*e., 20 liters and mixed it.
- After adding water in *Gokshur*, it was left overnight.
- Then next day it was kept on gas stove on mild heat to make *Gokshur Kwatha.*
- When one-fourth of the water content remained (i.e., 4 Liters), then heat was stopped and utensils was removed from gas stove and filtered with the help of marking cloth. Now, *Gokshur Kwatha* is ready for preparation of *Trayushnadi Gutika* sample A.

Observations:

- Raw *Gokshur* was converted into *Yavakuta Churna*
- During process of *Gokshur Kwatha Dravya* preparations, characteristics smell was observed.
- Gradually water loss was observed.

Precautions:

- All procedure done very carefully.
- *Kwatha* material should be *Yavakuta Churna* form only.
- Always mild to medium heat should be preferred.
- Used utensils should be clean to avoid any contaminations.
- Marking cloth should be also cleaned which is used for filtration.

Phase 2: Preparation of *Trayushnadi Gutika* (sample A)

Procedure:

- Prepared *Kwatha* of *Gokshur* (some amount) was taken in wide mouth utensils which were taken from step 1, again kept on gas stove on mild heat.
- Then added *Shuddha Guggulu* in this *Kwatha* and stirred continuously.
- After sometimes *Guggulu* start to become melting and *Kwatha* mixture started to become viscous.
- When mixture obtained *Lehya* like consistency then stop to heat and rest for cooling.
- After that equal amount of *Trikatu* and *Triphala Churna* was added with respect to *Shuddha Guggulu* and remains *Gokshur Kwatha* was taken as a *Bhavana* and mixed properly. After that this mixture was put in Sun light for further drying.
- Dry material was kept in Mortar and well triturate the material with the help of Pestle and made *Gutika*e. ***Trayushnadi Gutika* sample A.**
- Again, *Gutika* was placed in Sun light for complete drying.
- After complete drying total *Gutika* was weighed and stored in air-tight container.

Observations:

- The colour of end product was **Blackish**.
- Characteristics smell was obtained.

Precautions:

- *Shuddha Guggulu* was completely melted in *Kwatha Dravyas* and stirred continuously otherwise stick to the utensils.
- When added main ingredients then material should not be hot otherwise chances to burn.
- Prepared material should be complete dry otherwise there is chances to fungal growth.

- Prepared *Gutika* should be stored in air-tight container when dry properly.

Results:

- Weight of total material of *Trayushnadi Gutika* sample A - 5.700 kg
- Weight of final prepared material of *Trayushnadi Gutika* sample A - 5.675 kg.
- **Weight of final prepared material of *Trayushnadi Gutika* sample A - 5.425 kg**
- For testing and sampling - 250 gm

Step No. 06: Preparation of *Trayushnadi Gutika* sample-B (*Bhavana* with *Amalaki Swarasa*)
Reference: *Chakradatta Pramehadhikara*

Name of method: *Guggulu Kalpana*

Materials required:

A. All materials are taken from previous practical:

1. Trikatu Churna - 1.425 kg
2. Triphala Churna - 1.425 kg
3. Shuddha Guggulu - 2.850 kg
4. Amalaki Swarasa obtained (for *Kwatha* preparation) - 2.4 liter

B. Water as per requirement:

Apparatus and Utensils: Mortar and Pestle, Spatula, Sieve, Stainless steel vessels, Gas stove, Marking cloth, weighing machine, etc.

Procedure: Process could be divided into two steps

Phase 1: Preparation of *Amalaki Swarasa*

Procedure:

- Firstly, wet Amla of 10 kg for *Amalaki Swarasa* preparations was taken in large utensils and then wash from water.
- After that all Amla was cut into small pieces and seeds was separate out and then kept in Mortar and Pestle for prepare ***Kalka*** like paste.
- Then paste was put in Marking cloth and squeeze hardly to obtained Swarasa. Total 2.4 litre *Amalaki Swarasa* was obtained.

Observations:

- Wet *Amla* was bright green in colour but after trituration it becomes faded green paste form obtained.
- Characteristics sharp smell was found.

Precautions:

- Always taken fresh *Amla* and large size.
- Paste made properly and squeezed to obtain proper amount of *Swarasa* for *Trayushnadi Gutika* sample B preparation.

Phase 2: Preparation of *Trayushnadi Gutika* (sample B)

Procedure:

- Prepared *Shuddha Guggulu* and some water was kept on mild heat and stirred continuously.
- After sometimes *Guggulu* start to become melting and started to become viscous.
- When *Guggulu* was completely melted and obtained ***Lehya*** like consistency then stop to heat and rest for cooling.
- After that equal amount of *Trikatu* and *Triphala Churna* was added with respect to *Shuddha Guggulu* and *Amalaki Swarasa* was taken as a *Bhavana* and mixed properly. After that this mixture was put in Sun light for further drying.
- Dry material was kept in Mortar and well triturate the material with the help of Pestle and made *Gutika*e., ***Trayushnadi Gutika* sample B.**
- Again, *Gutika* was placed in Sun light for complete drying.
- After complete drying total *Gutika* was weighed and stored in air-tight container.

Observations:

- The colour of end product was **bright Blackish**.
- Characteristics smell was obtained.

Precautions:

- *Shuddha Guggulu* was completely melted in *Dravyas* and stirred continuously otherwise stick to the utensils.
- When added main ingredients then material should not be hot otherwise chances to burn.
- Prepared material should be complete dry otherwise there is chances to fungal growth.
- Prepared *Gutika* should be stored in air-tight container when dry properly.

Results:

- Weight of total material of *Trayushnadi Gutika* sample B - 5.700 kg.
- Weight of prepared material of *Trayushnadi Gutika* sample B - 5.575 kg.
- **Weight of final prepared material of *Trayushnadi Gutika* sample B - 5.375 kg**
- For testing - 200 gm.

Preparation of *Triphala Yavakuta Churna* & *Triphala Churna*

Figure 1: Haritaki

Figure 2: Bibhitaki

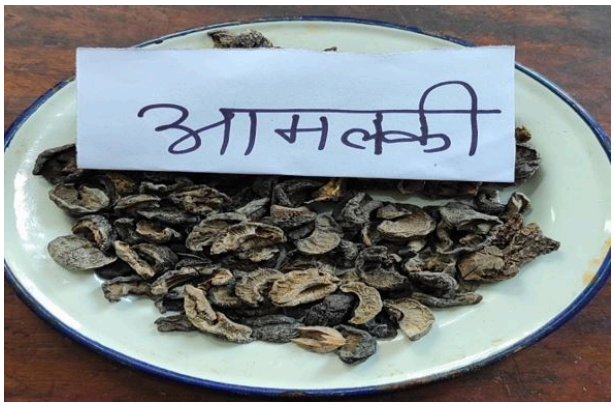

Figure 3: Amalaki

Figure 4: Ashuddha Guggulu

Figure 5: Prepared Triphala Churna

Guggulu Shodhana

Figure 6: Preparation of Triphala Kwatha

Figure 7: Prepared Triphala Kwatha

Figure 8: Pottali hanging in Triphala Kwatha

Figure 9: Guggulu after filtration

Figure 10: Filtered Guggulu on heat

Figure 11: Shuddha Guggulu

Preparation of Trikatu Churna

Figure 12: Pippali

Figure 13: Maricha

Figure 14: Shunthi

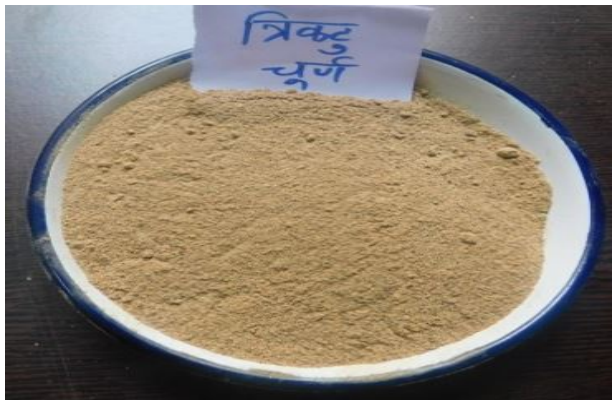

Figure 15: Prepared Trikatu Churna

Preparation of Trayushnadi Gutika sample-A (Bhavana with Gokshur Kwath)

Step: 01

Figure 16: Gokshura

Figure 17: Prepared Gokshura Kwatha

Step: 02

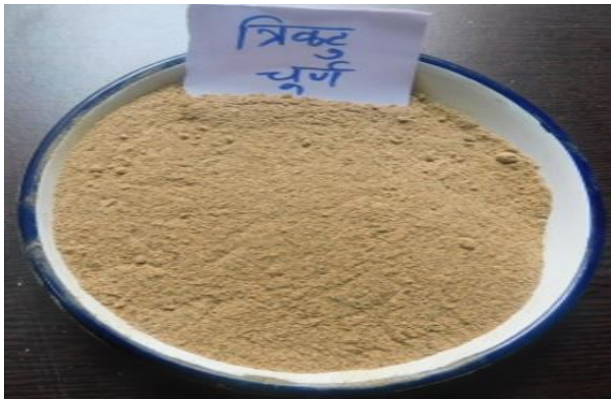

Figure 18: Trikatu Churna

Figure 19: Triphala Churna

Figure 20: Shuddha Guggulu

Figure 21: Final stage of Trayushnadi Gutika

Figure 22: Final stage of Trayushnadi Gutika

Figure 23: Trayushnadi Gutika

Observations and Results

Table 1: Organoleptic characters

SN	Test	Result
1.	Appearance	Round Vati
2.	Colour	Krishna varna
3.	Odour	Guggulu Gandhi
4.	Taste	Katu

Table 2: Results of Physico-chemical Study

SN	Parameters	Value (in g) (Trayushnadi Gutika S-A)	Value (in g) (Trayushnadi Gutika S-B)
1.	Wt. of 20 Vati (Tablets)	20.58 g	20.56 g
2.	Average weight	1.029 g	1.028 g
3.	Highest weight	1.21 g	1.13 g
4.	Lowest weight	0.945 g	0.980 g
5.	Disintegration time (in NS)	38 min	35 min
6.	Disintegration time (in N/10 HCl)	29 min	25 min

Table 3: Comparative analytical data of the *Trayushnadi Gutika* (Sample - A & B).

SN	Analytical Parameter	Units	Results (TG S-A)	Results (TG S-B)	Test Method Reference	Limits as per ASU Pharmacopoeia	Conformity
1.	pH (1% aqueous solution)	-	3.78	3.61	API	-	-
2.	Loss on drying at 105°Cg/100g	% w/w	10.21	12.62	API	-	-
3.	Total Ash	% w/w	5.01	6.12	API	-	-
4.	Acid-insoluble Ash	% w/w	0.32	0.19	API	-	-
5.	Water-soluble extractive	% w/w	25.32	32.29	API	-	-
6.	Alcohol-soluble extract	% w/w	13.78	51.93	API	-	-
7.	Metal analysis: a. Lead (as Pb)	mg/kg	1.88	2.31	APL/CHE/STP-112	-	YES
	b. Arsenic (as As)	mg/kg	1.13	2.88			
	c. Cadmium (as Cd)	-	Below quantification limit	Below quantification limit			
	d. Mercury (as Hg)	mg/kg	0.672	0.889			
8.	Total bacterial count (aerobic microbial)	cfu/gm	315	280	API	Not more than 105	YES
9.	Total fungal count (yeast & mould)	cfu/gm	135	90	API	Not more than 103	YES

Discussion

In the analytical parameters, both sample of *Trayushnadi Gutika* was found Round *Vati* in appearance, *Krishna* in colour, *Guggulu - Gandhi* in odour and katu in taste. In *Trayushnadi Gutika* (sample A & B), average weights of both Vati are - 1.029gm, 1.028 gm, respectively. Its disintegration time in Normal solution (NS) is - 38-minute, 35 minute and disintegration time in N/10 HCl is - 29-minute, 25 minutes respectively.

Discussion on physico-chemical results:

The data presented in Table no. 3 reveals that the pH (1% aqueous solution is comparatively slightly high in *Gokshur Kwath Bhavit Trayushnadi* (3.78) as compared to *Amalaki Swaras Bhavit Trayushnadi Gutika* (3.61).

The LOD at 105°C is comparatively high in *Amalaki Swaras Bhavit Trayushnadi Gutika* (12.61%) as compared to *Gokshur Kwath Bhavit Trayushnadi Gutika* (10.21%).

The ash value is comparatively high in *Amalaki Swaras Bhavit Trayushnadi Gutika* (6.12%) as compared to *Gokshur Kwath Bhavit Trayushnadi Gutika* (5.01%).

The acid-insoluble ash value is comparatively high in *Gokshur Kwath Bhavit Trayushnadi Gutika* (0.32%) as compare to *Amalaki Swaras Bhavit Trayushnadi Gutika* (0.19%).

The Water-soluble extractive value is comparatively high in *Amalaki Swaras Bhavit Trayushnadi Gutika* (32.29%) as compared to *Gokshur Kwath Bhavit Trayushnadi Gutika* (25.32%).

The Alcohol-soluble extractive value is comparatively high in *Amalaki Swaras Bhavit Trayushnadi Gutika* (51.93%) as compared to *Gokshur Kwath Bhavit Trayushnadi Gutika* (13.78%).

Metal analysis (respectively Pb, As, Cd, Hg) are comparatively high in *Amalaki Swaras Bhavit Trayushnadi Gutika* (2.31, 2.88, below limit and 0.889 mg/kg) as compared to *Gokshur Kwath Bhavit Trayushnadi Gutika* (1.88, 1.13, below limit and 0.672 mg/kg) but both samples are within the limit as per ASU Pharmacopoeia.

Total aerobic microbial count and total yeast & mould count value are comparatively high in *Gokshur Kwath Bhavit Trayushnadi Gutika* (315 & 135 cfu/g respectively) as compare to *Amalaki Swaras Bhavit Trayushnadi Gutika* (280 & 90 cfu/g respectively) but both are in within limit as par API. Overall *Gokshur Kwath Bhavit Trayushnadi Gutika* having better physico-chemical result than *Amalaki Swaras Bhavit Trayushnadi Gutika* except total aerobic microbial count and total yeast & mould count.

Conclusion

Trayushnadi Gutika sample A and B was prepared according to *Chakradatta Pramehadhikara*. The ingredients of both drugs were similar except *Bhavana*. *Trayushnadi Gutika* sample A having *Bhavana* of *Gokshur Kwath* and *Trayushnadi Gutika* sample B having *Bhavana* of *Amalaki Swaras.* The comparative analytical evaluation of *Trayushnadi Gutika* (Sample A and Sample B) indicates that both formulations adhere to standard physico-chemical parameters, with notable differences influenced by the Bhavana process. Sample A, prepared with *Gokshur Kwath Bhavana*, exhibited a slightly higher pH, lower loss on drying, and greater acid-insoluble ash value compared to Sample B, which was processed with *Amalaki Swaras Bhavana*. Additionally, the extractive values - both water-soluble and alcohol-soluble - were found to be higher in Sample B, suggesting a greater solubility profile in both mediums.

Metal analysis confirmed that both samples were within the permissible limits prescribed by the ASU Pharmacopoeia, while microbial limits also remained within the acceptable range per API standards, despite slightly elevated values in Sample A.

In summary, the study highlights that while both variants of Trayushnadi Gutika maintain pharmaceutical integrity, *Gokshur Kwath Bhavit Trayushnadi Gutika* demonstrated a relatively favorable physico-chemical profile except in microbial counts. These findings suggest that the *Bhavana* process plays a significant role in shaping the formulation's characteristics, potentially influencing its therapeutic applications. Further investigation into clinical efficacy and pharmacological impacts may provide deeper insights into their comparative benefits.

References

1. Tripathi I. Chakradatta, Vaidyaprabha Hindi Commentary. Varanasi: Chaukhambha Sanskrit Bhavan; 2012. p. *216 [Crossref][PubMed][Google Scholar]*

2. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. New Delhi: Controller of Publications; 1996. 2:736. *[Crossref][PubMed][Google Scholar]*

3. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 7. 1:A-80. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

4. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 8. 7:A-89. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

5. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 8. 1:A-95. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

6. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 3. 38:A-54. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

7. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 3. 38:A-54. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

8. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 3. 38:A-54. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

9. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. Appendix 3. 38:A-54. *New Delhi: Controller of Publications; 1996. p. 2 [Crossref][PubMed][Google Scholar]*

10. Anonymous. Quality Control Methods for Medicinal Plant Materials. Geneva: World Health Organization; 2002. p. *68-70 [Crossref][PubMed] [Google Scholar]*

11. Hill WE, Datta AR, Feng P, Lampel KA, Payne WL. Identification of foodborne bacterial pathogens. In: Merker IR, editor. FDA's Bacteriological Analytical Manual. *8th ed. Rev A. Washington: AOAC International; 1995. p. 353-88 [Crossref][PubMed] [Google Scholar]*