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PRELIMINARY PHARMACEUTICO ANALYTICAL STUDY OF AMALAKYADI GUTIKA

AMBIKA S^{1*}, SEMWAL N², GOVINDA SK³ AND HUSSAIN G⁴

1: Post Graduate Scholar, **2:** Post Graduate Scholar, **3:** Professor, **4:** Associate Professor
Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara
College of Ayurveda Hospital, Hassan-573201

*Corresponding Author: Dr. Ambika S: E Mail: ambikasudarshan152@gmail.com

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ABSTRACT

Introduction: Gutika kalpana is one among the secondary preparation in Ayurveda pharmaceuticals. Gutika is a solid dosage form that is largely produced. It may be prepared from herbal, herbo-mineral or mineral drugs. **Aim:** To develop preliminary standard parameters for amalakyadi gutika. **Materials and methods:** Amalaki, kamala beeja, laja, kushta and vataroha are the five ingredients of Amalakyadi gutika, that were taken, powdered and prepared gutika by adding honey by niragni method. The prepared gutika was subjected to organoleptic and analytical parameters of Gutika kalpana as per the protocol of testing of ASU drugs. **Observations and results:** The results of organoleptic characters like appearance, odour, taste and physico-chemical parameters like pH, Hardness, Friability, Disintegration, Uniformity of weight, Total ash, Acid insoluble ash, Water soluble ash and Extractive values have been obtained. **Discussion and Conclusion:** Amalakyadi gutika is a simple formulation which contains only five ingredients and it is easy to prepare. It is mainly used in the treatment of mukhashosha and trushna.

Keywords: Amalakyadi gutika, Ayurvedapharmaceutics, Gutika kalpana

INTRODUCTION

Aushadha is a prime factor for any treatment, and the aushadha are designed in various dosage forms in which gutika is

one. Gutika kalpana is one among the secondary preparation in Ayurveda pharmaceuticals that is also known as vati

popularly. Vataka, gutika, vati, modaka, vatika, pindi, guda and varti are the synonyms of vati [1]. Gutika is the largely produced solid dosage form. It may be prepared from herbal, hebo-mineral or mineral drugs [2].

Gutika can be prepared by either paka of guda, sarkara, guggulu added with fine powder of aushadha dravya [3] or prepared by thoroughly pounding fine powder of aushadha dravya with guda or guggulu; or

by triturating the fine powder of aushadha dravya with honey or any of the liquid preparation [4].

Amalakyadi gutika is one of the classical formulation comprising of Amalaki, Kamala, Kushta, Laja, Vataroha and indicated in trushna and mukhashosha [4] and its properties are mentioned in **Table 1**.

In this present study the method of preparation and its analytical parameters have been discussed.

Table 1: Rasapanchaka of amalakyadi ingredients

S. No.	Ingredients	Rasa	Guna	Virya	Vipaka	Doshagnata	Karma	Rogagnata
01	Amalaki	Pancharasayukta lavana varjita rasa (All tastes except astringent taste)	Laghu (light), ruksha (dry)	Sheeta (cold)	Madhura (Sweet)	Tridosha hara (Alleviates all dosha)	Rasayana (Rejuvenator), chakshushya (Beneficial to eyes)	Daha (Burning sensation), raktapitta (Bleeding disorder)
02	Kamala	Pancharasayukta amla varjita rasa (All tastes except sour taste)	Guru (Heavy), ruksha (Dry)	Sheeta (Cold)	Madhura (Sweet)	Pitta kapha hara (Alleviates pitta and kapha)	Chakshushya (Beneficial to eyes), rasayana (Rejuvenator)	Daha (Burning sensation), trushna (Thirst), raktapitta (Bleeding disorder)
03	Kushta	Katu (Pungent), tikta (Bitter), madhura (Sweet)	Ruksha (Dry), tikshna (High intensity)	Ushna (Hot)	Katu (pungent)	Kapha, vata hara (Alleviates kapha and vata dosha)	Varnya (Gives complexion), raktashodhaka (helps to purify the blood)	Shwasa (Dyspnoea), Kasa (Cough)
04	Laja	Madhura (Sweet)	Laghu (Light), ruksha (Dry)	Sheeta (Cold)	Madhura (Sweet)	Vata kapha hara (Alleviates vata and kapha)	Deepana (Appetizer)	Daha (Burning Sensation), chardi (Emesis)
05	Vataroha	Madhura (Sweet), kashaya (Astringent)	Guru (Heavy), ruksha (dry)	Sheeta (Cold)	Madhura (sweet)	Pitta, kapha hara (Alleviates pitta and kapha)	Keshya (Good for hair), vranashodhaka (Wound purifier)	Vrana (Wound), daha (Burning Sensation)

MATERIALS AND METHODS

Pharmaceutical Study of Amalakyadi

Gutika:

The ingredients and its quantity mentioned in **Table 2**.

Table 2: Ingredients of formulation [5]

Sl. No	Ingredients	Botanical name	Part used	Quantity
01	Amalaki	<i>Phyllanthus Emblica</i> L.	Fruit	10g
02	Kamala	<i>Nelumbo nucifera</i> Gaertn.	Seeds	10g
03	Kushta	<i>Saussurea costus</i> (Falc.) Lipsch.	Bark	10g
04	Laja	<i>Oryza sativa</i> L.	Grain –Popped	10g
05	Vata	<i>Ficus benghalensis</i> L.	Aerial roots	10g
06	Madhu	Honey		40ml

Method of preparation:

Amalaki, Kushta, Laja, Kamala beeja were collected from teaching pharmacy of department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda & Hospital, Hassan (SDMCAH). Fresh Vataroha (aerial roots of banyan tree) was collected from herbal garden of SDMCAH and dried in shade. Laja was fried to remove the moisture content in it. All the ingredients were taken in specified quantity

mentioned in **Table 1**. The ingredients were powdered in khalva yantra separately and sieved through a cloth to get very fine powder i.e., 120 particle size. All the ingredients were mixed homogenously and triturated by adding 40 ml of honey. Once it attained the test of perfectness of gutika, they were rolled into pills. Eighty Amalakyadi gutika of 500 mg were prepared (**Figure 1-9**). The gutika was dried under shade and packed in airtight container.



Fig 1: Amalaki



Fig 2: Kamala beeja



Fig 3: Kushta



Fig 4: laja



Fig 5: Vataroha



Fig 6: Ingredients powdered and mixed



Fig 7: Adding honey to the mixture



Fig 8: Mixing the powdered drugs with honey



Fig 9: Prepared Amalakyadi gutika

ANALYTICAL STUDY OF AMALAKYADI GUTIKA

The organoleptic characters like appearance, odour, taste and physico-chemical parameters like pH, Hardness, Friability, Disintegration, Uniformity of weight, Total ash, Acid insoluble ash, Water soluble ash and extractive values were carried out.

pH determination [6]:

pH value of an aqueous liquid may be defined as the common logarithm of the reciprocal of the hydrogen ion concentration expressed in grams per litre. The pH value of a solution can be measured with an apparatus called pH meter, consists of a voltmeter connected with two electrodes. pH meter was calibrated to 4,7

and 9 by using buffer solution. One Amalakyadi gutika was dissolved in 10 ml of distilled water and this solution was taken in a glass beaker. The electrode of the pH meter was dipped to the solution and reading was noted.

Hardnesstest [7]:

Amalakyadi gutika was taken and tested for hardness with Monsanto Hardness tester. The lower plunger was placed in contact with the tablet. The upper plunger was then forced against a spring by turning a threaded bolt until the tablet fractures. The force of fracture was recorded.

Friability [8]:

This test is intended to determine the physical strength of tablets. For tablets with an average weight of 0.65g or less take a sample of whole tablets corresponding to about 6.5g and for tablets with an average weight of more than 0.65g and tablets with an average of more than 0.65g sample of 10 whole tablets were taken. The ten tablets were de dusted and weighed accurately. The tablets were placed inside the drum and it was rotated to 100 times. After the rotations the tablets were removed and also any loose dust from them also removed and weighed accurately. The percentage of

weight loss was calculated. A maximum loss of weight not greater than 1.0 percent is acceptable for most tablets.

Disintegration time [9]:

The tank of the disintegration apparatus was filled with distilled water up to the mark. 750 ml of distilled water in the 1000ml beaker was taken. The timer of the instrument was set for 60 minutes. The temperature of water beakers to 37⁰C and that of water in the main tank to 37.5⁰C was maintained. One tablet was introduced into each tube and, added a disk to each tube. The assembly was suspended in the beaker containing water and the apparatus was operated. The time duration in which tablet disintegrated was noted.

Uniformity of weight [10]:

Twenty tablets were selected randomly and weighed. The average weight was calculated. The individual weight of the tablet was taken. Not more than two of the individual weights deviate from the average weight more than the percentage shown in the following table and none deviates by more than twice that percentage. The percentage deviation for average weight of tablets are given in **Table 3**.

Table 3: Average weight of tablets and its percentage of deviation

Average weight of tablets	Percentage deviation
80 mg or less	10
More than 80 mg but less than 250 mg	7.5
250 mg or more	5

Total ash [11]:

2-3 grams of amalakyadi gutika were accurately weighed, incinerated and taken in a tared silica dish. The crucible was kept in a muffle furnace at a temperature not exceeding 600⁰C until free from carbon. After cooling it was weighed and calculated the percentage of ash with reference to air dried drug.

Acid insoluble ash [12]:

The ash of sample was transferred in a 250 ml beaker and 100 ml of dilute Hydrochloric acid was added. The beaker was heated till the liquid boiled. The solution was filtered and the insoluble matter was collected on an ashless filter paper (Whatmann no 41). It was washed with hot water until the filtrate was neutral. The filter paper containing the insoluble matter was transferred to the crucible. It was dried on a hot plate and ignited at 600⁰ C in a muffle furnace. The residue was allowed to cool in a desiccator for 30 minutes and weighed without delay. The acid insoluble ash was calculated with reference to the air dried drug for the sample.

Water Soluble ash [13]:

The ash of sample was transferred in a 250 ml beaker and 100 ml of distilled water was added. The beaker was heated till the liquid boiled. The solution was filtered and the insoluble matter was collected on an ashless filter paper (Whatmann no 41). It

was washed with hot water until the filtrate was neutral. The filter paper containing the insoluble matter was transferred to the crucible. It was dried on a hot plate and ignited at 600⁰ C in a muffle furnace. The residue was allowed to cool in a desiccator for 30 minutes and weighed without delay. The water soluble ash was calculated with reference to the air dried drug for the sample.

Water Soluble Extractive [14]:

Five grams of coarsely powdered amalakyadi gutika was taken with 100ml of distilled water in a closed flask and macerated for 24 hours. It was shaken frequently during six hours and allowed to stand for eighteen hours. It was filtered rapidly by taking precautions against loss of water. 25ml of the filtrate was evaporated in a tarred flat bottom shallow dish and dried 105⁰C to constant weight and it was weighed, water soluble extractive percentage of amalakyadi gutika was calculated with reference to air dried drug.

Alcohol Soluble extractive [15]:

Five grams of coarsely powdered amalakyadi gutika was taken with 100ml of alcohol in a closed flask and macerated for 24 hours. It was shaken frequently during six hours and allowed to stand for eighteen hours. It was filtered rapidly by taking precautions against loss of water. 25ml of the filtrate was evaporated in a tarred flat

bottom shallow dish and dried 105⁰C to constant weight and it was weighed, water soluble extractive percentage of amalakyadi gutika was calculated with reference to air dried drug.

OBSERVATIONS AND RESULTS:

All the ingredients of amalakyadi gutika turned finer after making churna. While doing bhavana with madhu the mixture

attained soft texture, fineness and particle size also reduced. After attaining the test of perfectness of bhavana, the mixture was taken and rolled into gutika of 500mg size and it was black in colour. Pharmaceutical observations and results of amalakyadi gutika was tabulated in **Table 4**. Observation and results of Analytical study of Amalakyadi gutika was tabulated in **Table 5**.

Table 4: Pharmaceutical observations and results of Amalakyadi gutika

Sl. No.	Parameters	Amalakyadi gutika
01	Appearance	Solid round in shape
02	Colour	Black
03	Odour	Characteristic smell
04	Taste	Kashaya and tikta rasa

Table 5: Observation and results of Analytical study of Amalakyadi gutika

Sl. No.	Parameters	Results
01	pH	3.6
02	Hardness	1kg
03	Disintegration time	10 minutes
04	Friability	0.01%
05	Uniformity of weight	5.20g+/-20mg
06	Total ash	0.9%
07	Acid insoluble ash	0.01%
08	Water Soluble ash	2.55%
09	Water soluble extractive value	0.134%
10	Alcohol soluble extractive value	0.022%

DISCUSSION

Amalakyadi gutika is one of the shamanoushadhi which is prepared out of Amalaki, kamala beeja, kushta, laja and vataroha. Out of five ingredients of Amalakyadi Gutika, specific useful part of the kamala is not mentioned in the classical reference, hence kamala beeja was taken for this preparation. All the ingredients were taken in mentioned quantity and gutika was prepared by adding Madhu by niragni method. The powders of the drugs were fully dried and it was very fine and

the particle size was 120. The gutika was prepared by subjecting to bhavana with honey till it attained the test of perfectness. The process of bhavana aids in reducing the particle size of the powder thereby increasing the surface area which in turn will increase the rate of absorption [16]. As it is mentioned to be placed in mouth and chewed, hence 500 mg gutika is suitable for administration. The prepared gutika was black in colour, was having kashaya tikta rasa and characteristic odour was appreciated indicating the active principles

of the ingredient used. The analytical parameters of amalakyadi gutika was done. The pH was 3.6 it suggests that it may be slightly acidic in nature or amla rasa of the formulation but the rasa of the prepared gutika was kashaya tikta it may be due to the combined effect of all the ingredients and they may mask the amla rasa of the gutika. Hardness of amalakyadi gutika was 1kg suggesting its soft nature and which inturns helps in quick absorption of the gutika in the oral mucosa. Friability of Amalakyadi gutika was 0.01% which suggests that the physical strength of the gutika is acceptable against the mechanical shocks during manufacturing, packing and transportation. Disintegration time of Amalakyadi gutika was 10 minutes. It suggests that the gutika is soluble in 10 minutes and within the limits. Average weight of the amalakyadi gutika was 520g. It has 0.020% weight variation may be due to manual preparation and it was within the limit. Total ash of the Amalakyadi gutika was 0.9% which suggests that it contains 0.9% inorganic compounds. Acid insoluble ash and water soluble ash of amalakyadi gutika was 0.01% and 2.55% respectively. It suggests that 0.01% of amalakyadi gutika will not be soluble in Acid and 2.55% of amalakyadi gutika will soluble in water. Water and Alcohol soluble extractive values of amalakyadi gutika were 0.134%

and 0.02% which suggests that solubility of the components in the respective media.

CONCLUSION

Amalakyadi gutika is a simple formulation which contains only five ingredients and it is easy to prepare. It is mainly used in the treatment of mukhashosha and trushna. The pharmaceutical procedure of amalakyadi gutika is simple. The values of analytical parameters can be considered as preliminary standardisation of Amalakyadi gutika. As it is a simple formulation with certainly available ingredients it can be brought into foray of clinical practice. Research in this has to be carried out to revalidate and put more light.

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