



A PHARMACEUTICO - ANALYTICAL INSIGHTS INTO MADANA MODAKA: AN AYURVEDIC APHRODISIAC

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ABSTRACT

Vajikarana, focuses on enhancing reproductive health and overall vitality. *Madana Modaka*, a classical Ayurvedic formulation, is noted for its *vajikarana* properties. In ancient wisdom, *Vajikarana* emphasizes holistic rejuvenation, balancing physical, emotional, and spiritual aspects of human health. This study aims to evaluate the pharmaceutico-analytical characteristics of *Madana Modaka*, exploring its formulation process and analytical profiling. The study revealed compliance with classical standards, highlighting its physicochemical stability, active phytoconstituents, and therapeutic potential.

Keyword : *Vajikarana*, *Madana Modaka*

INTRODUCTION

The fundamental purpose of procreation across all living beings is the survival of their species, and humans are no exception. Sperm in males and ovum in females transfer genetic material to offspring, with their quality directly impacting progeny health. Alarmingly, male reproductive health faces adverse trends like increased testicular cancer, declining semen quality, and abnormal sperms due to factors like chronic illnesses and chemical exposure. In India, it has been estimated by WHO (1976) to be 16.6%. Infertility rates are notably high, with male factors accounting for 26.1% of cases. Addressing this issue requires effective solutions. Ayurveda provides a comprehensive answer through *Vajikarana Chikitsa*, enhancing reproductive health and vitality.

Vajikarana Chikitsa, as outlined in Ayurvedic classics, demands strict adherence to prescribed guidelines. It begins with *Shodhana* (body cleansing) methods like *Vamana* (emesis) and *Virechana* (purgation) to prepare the body for rejuvenation¹. After *shodhana* therapy, rejuvenation is based on individual's *Prakriti* and specific health concerns. Herbal and herbo-mineral formulations are commonly used in forms like *modaka*, *lehya*, and *choorna* in *vajikarana*

अवाजी वाजीवात्यर्थं मैथुनेशक्तः क्रियते येन तद् वाजीकरणम्।

(च.चि. -२/३ (चक्रपाणि)

According to *Charkapani*, *Vajikarana* enhances coital capacity, improves the quality and quantity of *shukra*, and provides timely ejaculation. Aphrodisiacs, are highlighted in Ayurvedic texts for their role in restoring physiological balance. The drugs which are present possess nutritive properties, volatile oils, or neuro-muscular benefits, enhancing blood circulation and promoting physical and mental vitality. Thus, *Vajikarana* offers a holistic approach to reproductive health and well-being.

According to *Vashista*²:

गुडादि वर्तितश्रूणो वर्तिः स्याद् गुटिका गुडाः ।

मोदको वटकः पिण्डि तन्मात्रं चूर्णवन्मतम् ॥(216)

If the powders of drugs is mixed with (trituated) with jaggery etc. and rolled in to pills then it is called as varti, modaka, gutika, guda, pindi and vataka.

The formulation "*Madana Modaka*," derived from the classical Ayurvedic text *Bhaishajya Rathnavali*, has varying dosage recommendations by three authors: Shri Kaviraja Ambikadatta Shastri (12g), Prof. Siddinandan Mishra (6g), and Shri Vishwanath Dwivedi (2g). This study aims to determine the optimal dose for its *Vajikarana* (reproductive health) effects, focusing on *Vandyatva* (male infertility) and *Klaibhya* (male sexual dysfunctions).

OBJECTIVES

1. To prepare *Madana Modaka* according to *Bhaishajya Rathnavali* text.
2. To analyze the compounds physico-chemically.

MATERIALS AND METHODS:

Pharmaceutical preparation done in the Pharmacy of A L N Rao Memorial Ayurvedic Medical College and PG center, Koppa

Analytical study Done in Quality Control Lab of A L N Rao Ayurvedic Medical College, Koppa

The *Madana Modaka* was prepared as per the reference of *Bhaishajya Ratnavali* Ingredients are : *Vijaya Patra*, *Vijaya Beeja*, *Shunti*, *Karkatashringi*, *Katphala*, *Pippali*, *Kushta*, *Nagakeshara*, *maricha*, *Dhanyaka*, *Ajamoda*, *Haritaki*, *Saindhava*, *Yavani*, *Vibhitaki*, *Shati*, *Yashtimadhu*, *Amalaki*, *Talisapatra*, *Methika*, *Shweta* and *Krishna Jeeraka*, *Twak*, *Ela*, *Tejapatra*, *Karpoora*

Pharmaceutical study Comprised of:

1. *Shodhana* of *Vijaya Patra* & *beeja*.
2. Preparation of *Chooma*
3. Preparation of *Modaka*

PRACTICAL NO 1

Practical name : *Shodhana* of *Vijaya Patra* & *beeja*³.

Reference : *Rasatarangini* 24/394-395.

Equipment : Stove, vessels, spoon, cloth etc.

Ingredients : *Vijaya Patra* - 400gms
Vijaya beeja - 400gms.



fig no 1 Vijaya Beeja



fig no 2 Vijaya Patra

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Procedure:

Vijaya Patra and *Beeja* are taken and dipped in water separately for sometime

Then it was removed from water and dried under sunlight

After complete drying leaves and *beeja* are fried in ghee separately and powdered

PRACTICAL NO 2

Practical Name : Preparation of *choorna* of all ingredients⁴.

Reference : *Sha.Sa.Ma.*6/1.

Equipment's : *Khalva yantra*, *darvi*, cloths, micro pulverisers, filters, *ullukala yantra*, airtight containers. Etc.

Ingredients : **Table No 1 Ingredients of *Madana Modaka***

SI.NO	Ingredients	Botanical Name	Quantity
1.	<i>Vijaya patra</i>	<i>Cannabis sativa</i>	300gms
2.	<i>Vijaya Beeja</i>	<i>Cannabis sativa</i>	300gms
3.	<i>Shunti</i>	<i>Zingiber officinale</i>	50gms
4.	<i>Karkatashringi</i>	<i>Pistacia integerrima</i>	50gms
5.	<i>Katphala</i>	<i>Myrica nagi</i>	50gms
6.	<i>Pippali</i>	<i>Piper longum</i>	50gms
7.	<i>Kushta</i>	<i>Saussuria lappa</i>	50gms

8.	Nagakeshara	<i>Mesua ferrea</i>	50gms
9.	Maricha	<i>Piper nigrum</i>	50gms
10.	Dhanyaka	<i>Coriandrum sativum</i>	50gms
11.	Ajamoda	<i>Trachyspermum roxburghianum</i>	50gms
12.	Haritaki	<i>Terminalia chebula</i>	50gms
13.	Saindhava lavana	<i>Sodium chloride</i>	50gms
14.	Yavani	<i>Carum copticum</i>	50gms
15.	Vibhitaki	<i>Terminallia bellerica</i>	50gms
16.	Shati	<i>Hedychium spicatum</i>	50gms
17.	Yashtimadhu	<i>Glycyrrhiza glabra</i>	50gms
18.	Amalaki	<i>Embelica officinale</i>	50gms
19.	Talisapatra	<i>Abes webbiana</i>	50gms
20.	Methika	<i>Trigondlla foenum</i>	50gms
21.	Shweta Jeeraka	<i>Cuminum cyminum</i>	50gms
22.	Krishna Jeeraka	<i>Carum carvi</i>	50gms
23.	Twak	<i>Cinnamomum zeylanica</i>	50gms
24.	Ela	<i>Elettaria cardomomum</i>	50gms
25.	Teja patra	<i>Cinnamomum tamala</i>	50gms
26.	Karpoora	<i>Cinnamomum camphor</i>	50gms

Procedure

All the ingredients are taken in a required quantity and made into coarse powder in *Khalva yantra* separately

and again separately powdered in mixer grinder

And then filtered through sieve No 44/85

Fine powders are stored in airtight container

PRACTICAL NO 3

Practical Name : Preparation of *Madana Modaka*⁵

Reference : *Bhaishajya Rathnavali* 8/162-168.

Equipment's : *Khalva yantra, paka patra, chullika, darvi, thermometer, cloths, airtight containers, etc.*

Ingredients :

Vijaya patra - 250 gms

Vijayabeeja -250 gms

Shunti *Pippali*

Maricha. *Haritaki.*

Vibhitaki *Amalaki.*

Shweta jeeraka. *Ela*

Karkatashringi. *Kushta.*

Dhanyaka. *Saindahava.*

Shati *Talisapatra.*

Krishna jeeraka *Tejapatra.*

Katphala *Nagakeshara.*

Ajamoda *Yavani.*

Yastimadhu *Methika*

Twak *Karpoora.*

Khanda sharkara - 2000gms

Gritha - 500ml

Each 24 gms

Procedure:

Above mentioned all ingredients (practical no. 1 & 2) are taken separately in appropriate ratio.

In a vessel water was taken, to which Khanda sharkara was added paka was prepared, after attaining of 3-4 thready consistency of paka, the powder of all ingredients added, except Ela, Karpooora, Twak, Saindhava.

Heaten up to semisolid state by stirring well.

After attaining consistency of pill making, add other Eladi praksepaka drugs, remove from fire and make it cooled,

Then Madhu and Ghrita was added as required quantity and process was stopped

Then it was rolled into modakas of approximately 3gm size were moulded and preserved in airtight container.

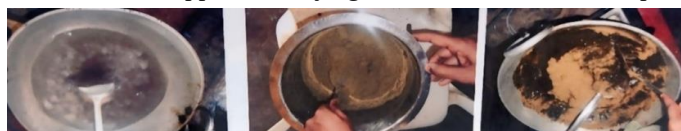


fig no 3 Khanda sharkara paka ,Mixing of churna



fig no 4 Mixing of ghrita , Mixing of madhu



fig no 5 Madana modaka

ANALYTICAL STUDY⁶

1.Organoleptic Characters.

2.Physico-chemical analysis:

- a. Total Ash
- b. Acid insoluble ash
- c. Water soluble ash
- d. Alcohol soluble extractives
- e. Water soluble extractives
- f. Loss on drying.
- g. Tablet testing:
 - Uniformity test
 - Hardness test
 - Friability test
 - Disintegration test

3. Qualitative and Quantitative analysis:

- a. Qualitative Analysis - identifying the components in the sample.
- b. Quantitative Analysis - determining the amount of each component in the sample
 - Total Fat content
 - Total Sugar
 - Total Alkaloid contents

Physico chemical and Chemical analysis of Madana modaka**Table No 2 : Organoleptic characters of Madana Modaka**

Appearance	Tablet
Color	Blackish green
Odour	Characteristic
Consistency	Semisolid
Taste	Sweet

Table No 3 : Phytochemical Test of Madana Modaka

Carbohydrate	++++
Protein	++
Alkaloid	+
Cardiac Glycosides	++++
Flavonoids	++
Tannins	++++
Anthraquinone Glycoside	+
Steroids	++++
Triterpenoides	+++

Table No 4 :Physico-chemical Parameters of Madana Modaka:

1. Total ash	3.4%
2. Water soluble ash	2%
3. Acid insoluble ash	0.5%
4. Water Extract	19%
5. Methanol Extract	39.33%
6. Loss on drying	9%
7. Tablet testing	
a. Uniformity test	6.035gm
b. Hardness test	6 N
c. Friability test	6.67mg Loss
d. Disintegration test	25%

Table 5 : Quantitative Estimation

Reducing sugars	14.2%
Non-reducing sugars	18.05%

Total sugar	32.25%
Total fat content	5.99%
Total alkaloid content	0.55%

TLC

Solvent system : Ethyl acetate:Methanol:Ammonia:8.5:1:0.5

Spraying Agent :Dragendraff Reagent

Table No 6 : TLC – Before spray

Rf value	Sample in		Rf value	Alkoloid in	
	UV	Visible		UV	Visible
0.03	Pale blue	-	-	-	-
0.2	Pale blue	-	-	-	-
0.49	Florescent green	-	-	-	-
0.61	Pale Florescent blue	-	0.6	Florescent blue	-
0.63	Blue	-	0.70	Bright Florescent blue	-

After Spray

Table no 7: TLC - After spray

Rf value	Sample in		Rf value	Alkoloid in	
	UV	Visible		UV	Visible
0.03	-	Pale Grey	-	-	-
0.2	-	Pale Purple Gray	-	-	-
-	-	-	0.50	-	Pale Brown
0.49	-	Pale Gray	-	-	-
0.63		Pale Yellow	-	-	-

Solvent system: Hexane Diethyl Ether:8:2

Table no 8 :TLC - Before Spray

Rf value	Sample in		Rf value	Alkoloid in	
	UV	Visible		UV	Visible
0.1	Pale Blue	-	0.03	Pale Blue	-

0.39	Pale Blue	-	0.16	Pale fluorescent blue	-
0.79	Pale Blue	-	0.2	Pale Blue	
-	-	-	0.42	Pale Blue	-

Table No 9 : TLC – After spray

Rf value	Sample in		Rf value	Alkoloid in	
	UV	Visible		UV	Visible
0.15	-	Pale Yellowish Brown	0.15	-	Pale Yellowish Brown
0.65	-	Pale Yellowish Brown	0.65	-	Pale Yellowish Brown

DISCUSSION

- ❖ In Ayurveda, *Vajikarana* is more than just an aphrodisiac; it represents the strengthening of the body by revitalizing the sexual organs. Unlike the Western approach, which primarily focuses on arousing desire, Ayurveda emphasizes overall health, fertility and intimacy. By enhancing the reproductive system, the body can achieve balance and vitality. Healthy *Shukra* is essential for better fertility and producing healthier offspring. Ayurveda recommends that individuals in sexual relationships consume aphrodisiacs to maintain reproductive health and boost overall immunity. The health of *Shukra* is closely linked to the body's immunity and mental equilibrium. Its expulsion is governed by *apana vata*; imbalances can lead to various disorders. Aphrodisiac herbs not only help prevent health issues but also promote psychological satisfaction and love. Regular use of these herbs over several months can enhance vitality, intimacy, and the enjoyment of prolonged relationships. This holistic approach aligns with Ayurveda's philosophy of nourishing both body and mind, ensuring a fulfilling and balanced life. By focusing on the interconnectedness of physical and emotional well-being, Ayurveda offers a unique perspective on health and happiness.
- ❖ The *Madana Modaka* formulation includes *Vijaya Patra* and *Vijaya Beeja* as primary ingredients, supported by *prakshepaka* drugs like *Shunti*, *Katashringi*, *Pippali*, *Kushta*, *Nagakeshara*, and others. Binding agents such as *Khanda Sharkara*, *Ghrita*, and *Madhu* are also used. Most ingredients possess *Madhura rasa*, *Madhura vipaka*, *Guru guna*, and *Sheeta virya*, enhancing semen quality and quantity (*Shukra Vriddhikara* and *Shukra Janaka*). Some exhibit *Tikshnaguna*, *Ushna virya*, and *Katu vipaka* properties, aiding semen ejaculation (*Shukra Pravartaka*). *Vijaya*, the key ingredient, stimulates the urogenital tract, nerve impulses, and blood circulation, addressing erectile dysfunction as an *Uttejaka*. Additionally, *Dipana*, *Pachana*, and *Vatakaphahara* properties tackle *klaibya* (impotence). Together, these ingredients exhibit *vajikarana* properties, promoting reproductive health, vitality, and overall effectiveness. This holistic blend aligns with Ayurvedic principles, ensuring both physical and psychological well-being.
- ❖ To ensure the quality of *Madana Modaka*, key steps were followed: 1) *Shodhana* of *Vijaya patra* and *beeja*, 2) Preparation of *Churna*, and 3) Preparation of *Modaka*.
- ❖ Raw Material Collection: Ingredients were gathered, cleaned, dried, authenticated, and weighed.
- ❖ Processing: *Shodhana* involved soaking *Vijaya patra* and *beeja* in water, drying them, and frying in ghee to remove physical, chemical, and toxic impurities. This process enhances the drug's efficacy by dissolving fat-soluble impurities.
- ❖ *Churna* Preparation: Ingredients were powdered individually using a pulverizer, filtered, and yielded 1425 grams from the initial 1800 grams.
- ❖ *Modaka* Preparation: Following the *Vati kalpana* method, a *paka* of *Khanda Sharkara* was prepared, and powdered ingredients were added and mixed. *Prakshepaka* drugs like *Ela*, *Twak*, and *Karpoora* were added to preserve their properties. *Ghrita* and *madhu* were incorporated, and *modaka* of the desired size was formed.
- ❖ Packaging and Storage: Adhering to GMP, precautions were taken to prevent spoilage and moisture absorption.

- ❖ To ensure the standardization of the finished product, an analytical study of the formulation was conducted. Both organoleptic and physicochemical analysis are deemed more reliable as they provide objective criteria. The methods and parameters used for the analysis were derived from various pharmacopoeias, recommended guidelines from the World Health Organization (WHO), and several analytical textbooks. The results from the phytochemical analysis strongly support the study related to aphrodisiac activity. The ingredients contain chemical constituents such as carbohydrates and proteins, which serve as building blocks for tissues; flavonoids and tannins, which act as rejuvenators; and steroids, which function as anabolic agents and sexual stimulants. Collectively, these components play a significant role in the production of sperm and semen, enhancing both the quality and quantity, while also boosting sexual drive over extended periods by improving blood flow to the penile region and throughout the body. Additionally, the presence of cardiac glycosides is beneficial for heart health. All these constituents synergistically contribute to the aphrodisiac activity. When tested, the prepared *Madana Modaka* showed a loss of 6.67 mg in the friability test, an average hardness of 6 N, and a disintegration time of 25%.

CONCLUSION

- ❖ The present study aims to evaluate the *Vajikarana* effect of *Madana Modaka* using pharmaceutico-analytical study. A practical demonstration of preparing *Madana Modaka* was performed according to classical references, with some modifications.
- ❖ To establish standardization for the finished product, *Madana Modaka* was subjected to relevant analytical parameters. The procedures followed included physico-chemical analysis, qualitative and quantitative analysis. The results revealed the presence of carbohydrates, cardiac glycosides, flavonoids, steroids, and vitamins in significant quantities, which play a synergistic role in aphrodisiac activity.
- ❖ Further studies should focus on characterizing specific compounds with defined activities related to aphrodisiac effects. The pharmaceutical standardization of the formulation should be emphasized. Additionally, it is crucial to evaluate the therapeutic effects of *Madana Modaka* through clinical trials with various specifications. To improve palatability and increase the shelf life of the formulation, granules may be prepared using the same ingredients. Proper storage of the finished product and an attractive market presentation are also important.

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