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EVALUATION OF APAMARGA BHASMA GEL IN THE MANAGEMENT OF SIDHMA KUSHTA – A CASE REPORT

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ABSTRACT

Background: *Ayurveda* explains health as the balance of all doshas, and imbalance leads to disease. Skin is the body's largest organ, and any imbalance first appears on the skin. *Sidhma Kushta* is one of the skin diseases caused by the imbalance of *Saptha Dhushyas*, which occurs in the *Avabhasini* layer. Tenia versicolor(co-related) is caused due to *Malassezia furfur* yeast. **Case Report:** In the present study, *Apamarga Bhasma* Gel was administered as a local application to a 20-year-old female patient with Sidhma Kushta symptoms after a thorough examination. **Outcome:** The patient's treatment and results were evaluated based on study parameters. *Ekamoolika Prayoga* in *Ayurveda* can work; one drug can help with the treatment. *Apamarga Bhasma* Gel will help in the reduction of *Sidhma Kushta.*

Keywords: *Avabhasini*, *Ekamoolika Prayoga*, Tenia versicolor, *Malassezia furfur*, Stratum corneum

INTRODUCTION

Health in *Ayurveda* is not just the mere absence of disease. It balances all *Doshas*, *Agni*, *dhatu*, *mala*, the *Prasannatha* and the balance of Soul, Senses, and Mind[1]. *Ayurveda* Acharyas have given importance to *Twacha* having a *Panchabhautik* constitution with *Vayu Mahabhutha* predominance; due to modernisation and Western culture, unhygienic practices and pollution cause hormonal changes in the body, due to

which *Sidhma Kushta* occurs. According to *Acharya Charaka, Sidhma kushta* is among the *Saptha Maha-kushthas*, which is caused due to improper food habits and an imbalance of *Saptha Dhushyas*. It occurs in the first layer of the skin according to *Ayurveda*, i.e., *Avabhasini*. *Sidhma Kushta* is characterised by White and coppery in the colour of Lesion. Thin, and when rubbed, it emits small particles of the skin in the form of dust. It resembles the flower of *Alabu* (*Lagenaria siceraria* Stand.). It generally is located in the chest region [2]. This type of *Kushta* is usually located in the chest because of the predominance of *Kapha* in the pathogenesis of this ailment. It also occurs in other parts of the body. It can be co-related to a fungal infection called Tinea Versicolor, also known as Pityriasis Versicolor (PV), caused by common commensal yeast, *Malassezia furfur*, which grows over the sebum affluent areas of the skin. It occurs mainly in the first layer of skin in the epidermis, i.e., Stratum Corneum. It is more prevalent in tropical countries, with a 50% incidence rate(NCBI)[3]. *Apamarga* was chosen in management of *Sidhma Kushta* from *Vaidhyamanorama*, *Shopha Visarpa Shvitra kushtadhikara* reference which says, "Application of the ash of *Apamarga* cures *Sidhma* as the ash of Lord *Chandrasekhara* eradicates all sins"[4]. The *Apamarga Bhasma* was converted into Gel form and was used for the present study. The whole plant was identified and collected, and then *Bhasma* and Gel were prepared out of it, given the patient quantity sufficient twice daily for half-an-hour external application for about 45 days with a follow-up of 15 days along with diet management.

SUBJECTS AND METHODS

Case Report:

A 20-year-old female patient came to the OPD of Government Ayurvedic College and Hospital, Hyderabad, having symptoms like coppery coloured patches(Hyperpigmentation) over the whole upper back region associated with mild itching; the patient was suffering since 2 years.

Personal History:

Name: XXX
Age: 20 years
Gender: Female
Marital Status: Unmarried
Occupation: Student
Appetite: Normal
Bowel: Regular
Micturition: 5-6 times a day
Sleep: Sound
Not a Known case of DM(Diabetes Mellitus), HTN (Hypertension), or Hypothyroidism

General examination

Pulse Rate: 72 bpm
Blood Pressure: 120/80 mm of Hg
Respiratory Rate: 15 breathes per minute

Table No.1: ROGI PAREEKSHA

Astasthana Pareeksha	***Dashavidha Pareeksha***
Nadi: Pitta Vataja	*Prakriti: Pitta Vata*
Mutra: Prakrutha	*Vikriti: Kapha pradhana Vata*
Mala: Prakrutha	*Sara: Madhyama*
Jihwa: Aliptha	*Satva: Madhyama*
Shabdha: Prakrutha	*Samhanana: Pravara*
Sparsha: Prakrutha	*Pramana: Madhyama*
Drik: Prakrutha	*Ahara Shakti :Abhyavaharana shakthi –Madhyama, Jarana shakthi –Madhyama*
Akrithi: Madhyama	*Vyayama shakti: Madhyama*
	Satmya: Madhura pradhana Sarvarasa
	Vaya: Madhyama

Past History: Nil
Family History: Nil
TWAK GATA STANIKA PAREEKSHA (Local Examination)
1. Kandu: Itching present on and off(occasional)
2. Varna (of lesion): Coppery Coloured lesion
3. No. of patches: More than 10 patches
4. Area affected: The whole upper back region is affected

NIDANA PANCHAKA

Nidana:*Viruddaharasevana,Amla and Katu rasa Atisevana,Adhyashana,Dadhi, Lavana Atisevana*
Poorvarupa:Symptoms in mild form
Rupa:*Tamra varna or Swetha varna,Tanu,Rajoghristam,Alabu pushpa Varna,Kandu*
Upashaya/Anupashaya*:*Nothing specific

SAMPRAPTHI GHATAKAS

Dosha*: Pitta-Sleshma-Vata* in successive order

Dushya*: Dhatu-Rasa, Rakta, Mamsa* and *Lasika* initially later all the seven *Dhatus*

Srotas*: Rasavaha, Raktavaha, Mamsavaha, Svedavaha*

Sroto Dushti*: Sanga*

Agnidusti*:Mandagni*

Aama*: Agnijanya*

Udbhavasthana*: Shakha (Twakadidhatus)*

Adhisthana*: Tvak, Lasika, Asrik*

Sancharasthana*: Sira, Dhamani, Tiryak Sira*

Vyaktasthana*: Urapradesha Twacha*

Vyadhiavastha*: Chirakari*

METHOD OF ASSESSMENT OF TREATMENT

A scoring system based on the severity of the symptoms assessed the patient's improvement.

Table No.2: SUBJECTIVE PARAMETERS

S.No.	PARAMETERS		0	1	2	3
1.	Colour of Lesion	Sveta Varna	Normal skin colour	Reddish white skin colour	Pearly white skin colour	White skin colour
		Tamra Varna	Normal skin colour	Light reddish-brown skin colour	Black skin colour	Reddish brown/Coppery skin colour
2.	Rajoghristam/Scaling		No scaling	Scaling on vigorous rubbing	Scaling on light pressure	Scaling on wearing clothes
3.	Kandu/Itching		No itching	Occasional Itching	Mild Itching	Moderate Itching
4.	Roughness		No Roughness	Mild Roughness	Moderate Roughness	Severe Roughness

Table No.3: OBJECTIVE PARAMETERS

S.No.	PARAMETERS	0	1	2	3
1.	Size of Patch	Not Measurable	< 5cm	5cm-10cm	>10cm
2.	Number of Patches	No lesions	1-5 lesions	6-10 esions	>10 lesions

INTERVENTION

PREPARATION OF APAMARGA BHASMA GEL

Apamarga Bhasma was prepared based on the reference of *Vaidhyamanorama*[4]. The good quality raw drug was procured from Nuziveedu city, Eluru distict of Andrapradesh, Dried in shade, then burnt into ashes. Then, it was pounded to fine powder. *Bhasma* was diluted in water, and filtrate was taken and mixed with 2-3 spoons of Carboxy-methyl Cellulase. The mixture was stirred to obtain homogeneity and soaked for 4-5 hours. Triethanolamine (TEA) was added 2-5 drops to form a gel consistency. Preservative Iscagaurd PEG added 1-2ml. Essential oil- Teatree was added for fragrance at the end, and the gel obtained was used to treat the patient.

TEST FOR GEL

ORGANOLEPTIC CHARACTERS OF GEL

The organoleptic characters refer to the properties of Gel, which have been evaluated with the help of sense organs. The appearance that is, the form, colour, and odour of the gel, were examined with the naked eye, which helped in assessing the quality and acceptability of the gel formulation.

PHYSICOCHEMICAL STANDARDS OF GEL

The physicochemical parameters of the gel determine pH value, Spreadability, and homogeneity.

pH VALUE

pH value of 1.0 gm of gel was accurately weighed and dispersed in 100 ml purified/distilled water. pH of dispersion was measured using a digital pH meter, which was calibrated before use with standard buffer solutions of 4.0,7.0 and 9.0. Measure the pH in triplicate and calculate the average values.

SPREADABILITY

Spreadability is the extent to which formulation, i.e., Gel, readily spreads on application to the skin or affected part. Therapeutic efficacy also depends upon Spreadability value.

Procedure:

To determine the Spreadability, 0.5 gms of Gel was taken and placed in a circle of 1 cm diameter premarked on a glass plate 20 x 20 cm, over which a second glass plate was placed. A weight of 500 gms was allowed to rest on the upper glass plate for about 5 minutes. The increase in the diameter due to gel spreading is calculated to identify the Spreadability of the Gel.

The time it takes for two slides to separate from the gel and be placed in between each other under a specific load is used to measure spreadability; the shorter the time it takes, the more spreadable the slides are.

It is calculated by using the formula:

$S = M . L / T$

Where M = weight tied to the upper slide

L = length of glass slides

T = time taken to separate the slides

Spreadability is essential to ensure the gel can be easily applied to the skin or affected area.

HOMOGENEITY

The Gel was examined visually for any undissolved particles or inconsistencies. Samples from different parts of the gel formulation were taken and then examined to see if there was proper homogeneity of the gel present without any undissolved particles and adequate consistency. Homogeneity ensures that the active ingredients are evenly distributed throughout the gel to provide consistent therapeutic effects.

MICROBIAL ANALYSIS

TEST FOR SPECIFIED MICRO-ORGANISM(Qualitative)

TEST FOR *Escherichia coli*

Primary Test

Pipette 1 ml of incubated sample from Soyabean Casein Digest Medium tube into 5 ml of MacConkey

Broth tube. The tube was incubated at 36^0-38^0 for 48 hours.

Secondary Test:

A streaked loop full of samples from MacConkey Broth tube onto a MacConkey Agar plate.Then plate was incubated at 43.5 to 44.5 for 24 hours, and the tube was examined and observed if there were pink colonies on the plate.

Confirmatory test:

Pipetted out 1 ml sample from MacConkey broth into a 5 ml peptone water tube and was mixed well and kept in an incubator for 24 hours at 43.5- 44.5.

After incubation, 0.5 ml of Kovac's Indole reagent was added to the peptone water tube from the sides of the tube. The pink colour ring on the surface of the sample was present or not observed.

TEST FOR *Staphylococcus aureus*

A streaked loop full of Soyabean Casein Digest Medium tube samples onto a Mannitol Salt Agar plate.Plate was incubated at 35^0-37^0 for 18-24 hours, and the tube was examined. Then, observed if there are pinpoint yellow colonies.

Confirmatory Test(Coagulase Test)

If growth occurs, coagulants are checked.The suspected colonies transferred to Rabbit Plasma. Incubate the tube in a water bath at 37^0 for 24 hrs. Every 3 hours, the tube is examined and observed to see if there is coagulation or not.

TEST FOR *Pseudomonas aeruginosa*

A streaked loop full of Soyabean Casein Digest Medium tube samples onto a Cetrimide Agar plate.The plate was incubated at 35^0 - 37^0 for 18-24 hours, and the tube was examined. Greenish colonies were present or not observed.

Confirmatory Test

Colonies were transferred from the Cetrimide Agar plate of Pseudomonas agar for fluorescein and Pseudomonas agar for Pyocyanine. The plate was incubated at 33^0-37^0 for not less than 3 days.Streaked surfaces were examined under ultra-violet light.The plates were examined to determine whether the fluorescence was observed under UV light.

TEST FOR *Salmonella abony*

Primary Test

1 ml of incubated sample from the Soyabean Casein Digest Medium tube was pipetted into 10 ml of Selenite F Broth tube. The tube was incubated at 36^0-38^0 for 48 hours.

Secondary Test:

A streaked sample loop from Selenite F Broth was streaked onto a Xylose Lysine Deoxycholate Agar plate. The plate was incubated at 36^0-38^0 for 18 to 24 hours, and the tube was examined.Observed whether there were Black colonies or not.

Confirmatory test:

Sub culture the sample by taking a colony from a Xylose Lysine Deoxycholate Agar plate onto a Triple Sugar Iron Slant. Incubate the slant at 36^0-38^0 C for 18 to 24 hours. It was observed whether Acid and Gas were present or not, with or without blackening.

MICROBIAL LIMIT TEST(Quantitative)

Test Bacterial count

15ml of Soyabean Casein Digest Media was prepared in a petri dish of 9 to 10 cm diameter.1ml of sample was added to soybean casein digest media in a sterile safety cabinet and mixed properly to make a homogenous mixture. It was incubated at 35^0C for 18 to 24 hours.

1ml sample from Soyabean Casein Medium was added to two sterile empty plates. 20 to 25 ml of liquified Soybean Casin Digest Agar was poured into the plate. Plates were allowed to stand for 15 to 20 minutes to get solidified. The plates were incubated in an inverted position at 30^0 to 35^0 C for about 5 days unless a more reliable count was obtained in a shorter time.

The number of colonies formed were counted. Calculated the results using plates with the greatest number of colonies, taking 300 colonies per plate as the maximum consistent with good evaluation.

Test Fungal count

15ml of Soyabean Casein Digest Media was prepared in a petri dish of 9 to 10 cm diameter.1ml of sample was added to soybean casein digest media in a sterile safety cabinet and appropriately mixed to make a homogenous mixture. It was incubated at 35^0C for 18 to 24 hours.

A 1ml sample from Soybean Casein Medium was added to two sterile empty plates.20 to 25ml of

liquified Sabourauds Dextrose Agar was poured into the plate. The plates were allowed to stand for 15 to 20 minutes to solidify. The plates were incubated in an inverted position at 20^0 to 25^0 C for about five days.

RESULTS OF GEL:

Table No.4: Organoleptic Characters

TESTS	RESULTS
Form	Gel
Colour	Grey
Odour	Aromatic

Table No.5: Physio Chemical Standards

TESTS	RESULTS
pH Value(10 % Solution)	12.80
Spreadability	38 mm
Homogeneity	Passes

MICROBIAL ANALYSIS OF APAMARGA BAHSMA GEL

Table No.6: TEST FOR SPECIFIED MICRO-ORGANISMS (Qualitative)

MICRO-ORGANISMS	LIMITS	RESULTS
E.coli	Absent/100ml	Absent
S.aureus	Absent/100ml	Absent
P.aeruginosa	Absent/100ml	Absent
S.abony	Absent/100ml	Absent

Table No.7: MICROBIAL LIMIT TEST (Quantitative)

MICROBIAL COUNT		LIMITS	RESULTS
Total Bacterial Count		30 – 300 cfu/ml	: No growth
Total Fungal Count		10 – 100 cfu/ml	: No growth

TREATMENT ADVISED:

The patient was treated after the negative skin patch test, with *Apamarga Bhasma* Gel quantity sufficient. It was applied on the extent of lesions distributed over the skin area, 2 times a day for half an hour. The duration of the treatment was 45 days, with a follow-up of every 15 days. After completion of treatment, the patient was advised to report to the institute's OPD once a month for 3 months. The patient was instructed to follow *Pathya Ahara*. *Pathya Ahara* of *Kushta Chikitsa* was told to follow, and no other internal medications have been given.

OBSERVATIONS AND RESULTS:

Age-20 Yrs
Gender-Female
Occupation-Student
Food Habit-Mixed
Socio-Economic Status-Middle Class
Chronicity- Since 2 Years
Part Affected -Upper Back Region

THE ASSESSMENT PARAMETERS BEFORE AND AFTER TREATMENT

Table No.8: SUBJECTIVE PARAMETERS

CHARECTERISTICS	BEFORE TREATMENT	AFTER TREATMENT
COLOUR OF LESION(*Tamra Varna*)	3	0
SCALING	1	0

ITCHING	1	0
ROUGHNESS	2	0

Table No.9: OBJECTIVE PARAMETERS

CHARECTERISTICS	BEFORE TREATMENT	AFTER TREATMENT
SIZE OF PATCHES	3	0
NO. OF PATCHES	3	0

Before the treatment, the patient was asked to do a skin patch test, which turned out to be negative. The colour of the lesion was *Tamra Varna*(coppery-coloured lesion) with a grading of 3. The scaling was very slight and appeared on vigorous rubbing. The itching was occasional, on and off. Roughness was moderately present. The patches were more than 10 cm and spread over a large area of the upper back region. No. of Patches was more than 10.

After 45 days of treatment with a 15-day follow-up, the patient has had relief from all the symptoms. The colour of the lesion reduced, and standard skin colour appeared. Scaling, itching, and Roughness were totally reduced. The number and size of the patches were reduced and faded gradually from Day 1 to Day 45, giving standard skin colour and texture to the upper back region of the patient. An excellent response from the patient to the treatment given was observed.

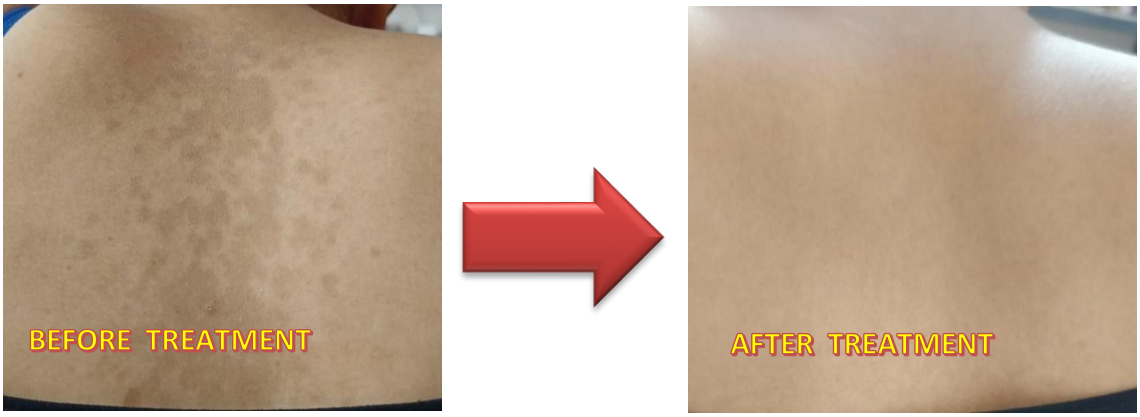


Figure No.1: Patient of *Sidhma Kushta* Before and After the treatment

DISCUSSION

Apamarga(*Achyranthes aspera* Linn,) the word itself explains, "The plant which removes all vitiated *Doshas* from the body and purifies the body".It has been considered in *Atharva Veda* as the **"Lord of all Plants on Earth"**.It has been used since ages by humanity for various ailments, from *Dhanthadhavana* to wound healing purposes. It is used for *Shirovirechana* and is considered under *Tiktha Skandha Dravyas*. Having *Krimighna, Vishaghna,* and *Kandughna karmas* and anti-microbial, anti-inflammatory, and wound healing activities. This *Ekamoolika* having *Bahu Karmas* will pave the way for *Samprapthi Vighatana* of *Sidhma Kushta*, hence eradicating the disease. Though this is a single case study, further study on the large sample will be required to determine the efficacy of the plant in *Sidhma Kushta Vyadhi*.

Sidhma Kushta is a *Kapha Vataja Vyadhi* and *Apamarga* being *Kaphavata hara Dravya* with *Tiktha* and *Katu Rasa, Sara, Teekshna guna, Ushna Veerya* and *Katu vipaka.* [5] *Kaphahara*- As the disease is of Fungal origin, it will remove the fungus on the skin. *Lekhana*- It will scrape away the fungus, and the lesion starts fading away as the Gel is applied over the lesion; *Kandughna*-itching is one of the symptoms of *Sidhma Kushta*; it will reduce the itching due to the properties of *Apamarga*, *Kledahara* and *Swedahara*-As in the disease fungus(*Malassizia furfur*) grows over the sebum affluent areas of skin hence *Kledahara* and *Swedahara* properties of *Apamarga* will remove it and thus not allowing the *Malassizia* to grow. Flavonoids, Tannins,

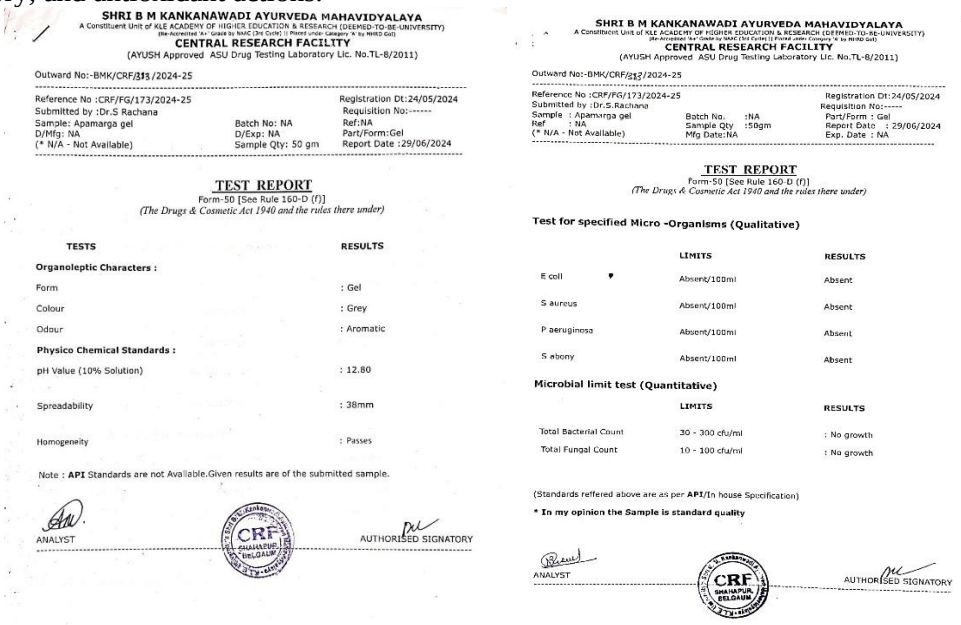
and Ecdysone in *Apamarga* have anti-microbial and anti-inflammatory and wound healing activities, which, in turn, help reduce the symptoms of *Sidhma Kushta.*

Probable Mode Of Action:

- *Apamarga* (*Achyanthes aspera* Linn.) *Tiktha, Katu Rasa, Sara Teekshna Guna, Katu Vipaka, and Ushna Veerya have Kaphavata Shamaka Doshakarma*[5].
- *Tiktha* and *Katu Rasa* have properties in *Deepana, Pachana, Kaphahara, Kushtaghna, Krimihara,* and *Lekhana.* In contrast, *Tiktha rasa* has *Kledahara, Swedahara, Katu rasa Kandughna, Sara guna-Lekhana, Teekshna guna,* and *Katu Vipaka* are *Kaphahara* and *lekhana, Ushna veerya* also has *kaphahara* properties. These *karmas* specifically explain their action on the skin and in the management of *Sidhma kushta.* Also, *Doshakarma,* which is *Kaphavatahara,* will help with the treatment.
- The Phytochemical constituents present in *Apamarga,* such as Ecdysone, Ecdysterone, Achyranthine, tannins; Flavonoids, are ant-microbial, inflammatory, and antioxidant actions.
- As a result of skin hyperpigmentation, excess melanin is produced. Hydroquinone (57.7%), the chief constituent present in *Apamarga, will help reduce* the amount of melanin produced by the skin.

CONCLUSION

Apamarga (*Achyranthes aspera* Linn.) plant whole plant as *Bhasma* Gel was utilised for the study. *Apamarga* has *Kaphavatahara Doshakarma* and anti-microbial activities, which will, in turn, help treat *Sidhma Kushta Vyadhi*. *Apamarga* possesses *Kushtagna, Kandughna, Kledahara, Swedahara, Krimihara* and *Lekhana* properties as well as *Teekshna* and *Ushna Guna,* which will help in the treatment of *Sidhma Kushta.* The anti-microbial activity of chemical constituents, as well as Hydroquinone, reduces the amount of melanin production. *Apamarga* Bhasma Gel helps eradicate *Sidhma Kushta*; As told in *Vaidhyamanorama,* just as the ashes of Lord *Chandrashekhara* eradicate all sins similarly, *Apamarga Bhasma Pralepa* eradicates *Sidhma Kushta*.



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A Constituent Unit of KLE ACADEMY OF HIGHER EDUCATION & RESEARCH (DEEMED-TO-BE-UNIVERSITY)
CENTRAL RESEARCH FACILITY
(AYUSH Approved ASU Drug Testing Laboratory Lic. No.TL-8/2011)

Outward No:-BMK/CRF/173/2024-25

Reference No :CRF/FG/173/2024-25 — Registration Dt:24/05/2024
Submitted by :Dr.S Rachana — Requisition No:------
Sample: Apamarga gel — Batch No: NA — Ref:NA
D/Mfg: NA — D/Exp: NA — Part/Form:Gel
(* N/A - Not Available) — Sample Qty: 50 gm — Report Date :29/06/2024

TEST REPORT
Form-50 [See Rule 160-D (f)]
(The Drugs & Cosmetic Act 1940 and the rules there under)

TESTS	RESULTS
Organoleptic Characters :	
Form	: Gel
Colour	: Grey
Odour	: Aromatic
Physico Chemical Standards :	
pH Value (10% Solution)	: 12.80
Spreadability	: 38mm
Homogeneity	: Passes

Note : **API** Standards are not Available.Given results are of the submitted sample.

ANALYST — AUTHORISED SIGNATORY

SHRI B M KANKANAWADI AYURVEDA MAHAVIDYALAYA
A Constituent Unit of KLE ACADEMY OF HIGHER EDUCATION & RESEARCH (DEEMED-TO-BE-UNIVERSITY)
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Reference No :CRF/FG/173/2024-25 — Registration Dt:24/05/2024
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Sample : Apamarga gel — Batch No. :NA — Part/Form : Gel
Ref : NA — Sample Qty :50gm — Report Date : 29/06/2024
(* N/A - Not Available) — Mfg Date:NA — Exp. Date : NA

TEST REPORT
Form-50 [See Rule 160-D (f)]
(The Drugs & Cosmetic Act 1940 and the rules there under)

Test for specified Micro -Organisms (Qualitative)

	LIMITS	RESULTS
E coli	Absent/100ml	Absent
S aureus	Absent/100ml	Absent
P aeruginosa	Absent/100ml	Absent
S abony	Absent/100ml	Absent

Microbial limit test (Quantitative)

	LIMITS	RESULTS
Total Bacterial Count	30 - 300 cfu/ml	: No growth
Total Fungal Count	10 - 100 cfu/ml	: No growth

(Standards reffered above are as per **API**/In house Specification)

*** In my opinion the Sample is standard quality**

ANALYST — AUTHORISED SIGNATORY

Figure No.2 & 3: Test Reports of Apamarga Bhasma Gel

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