

## CLINICAL EFFICACY OF *NARIKELA SUKTHI CHOORNA* (*COCOS NUCIFERA LINN.*) ON *MUKHADOOSHICA* WITH SPECIAL REFERENCE TO *ACNE VULGARIS*

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### ABSTRACT

*Narikela* (*Cocos nucifera* Linn.) is commonly available all over India. The plant has references in ancient *Ayurvedic* literatures like *Susrutha samhitha*, *Ashtanga hridaya*, *Bhavaprakasha nigantu* etc and is commonly indicated for diseases like *Amlapitha*, *Vipadika*, *Suryavartha*. Acne is the bane of the youth and is the most common skin disease facing mankind. It afflicts 89% of seventeen year old's to some degree and is found to have parity with the disease *Mukhadooshika* mentioned in *Ayurvedic* texts. The objectives of the study were to conduct preliminary phytochemical study of *Narikela sukthi choornaas* (*Cocos Nucifera* Shell Powder) and to evaluate the drug clinically on *Mukhadooshika* (*Acne vulgaris*). The preliminary phytochemical studies were done by using various extracts with different solvents. Clinical trials were done on 20 patients where the patients were treated with *Narikela sukthi choorna* as an external application. The duration of treatment was 15 days and the patients were assessed on 7<sup>th</sup> and 15<sup>th</sup> day. The effects of treatment were assessed statistically on the basis of gradation of cardinal signs and symptoms, before and after the treatment.

The result shows that the drug is statistically significant for the disease *Mukhadooshika* in symptoms like *Vedana*, *Kandu* and, *Vaivarnya* and *Srava*.

**Keywords:** *Narikelasukthi*, *Mukhadooshika*, *Cocos nucifera* Linn.

### INTRODUCTION

There is an inborn relationship between man and nature. Man cannot survive without nature, which has given birth to him. Nature especially the biological environment, which includes plant kingdom, has a pivotal role in the healthy existence of human life. Every plant in the universe is useful in some form for human health.

At first man used the drugs as such in its raw form but later he developed certain techniques to make the

drugs consumable and more potent along with palatability. These processes are known as *Kalpanas* or *Samskaras*. Analyzing the pharmacological activity of the drug under modern scientific parameters started in the modern era and many drugs were screened thoroughly for their action.

In the present era, the scarcity of medicinal plants is a burning problem of *Ayurvedic* system. So the proper understanding and disclosure of new therapeutic uses

of available plants is the needs of the hour. That means scientific studies to explore all pharmacological properties and therapeutic uses of plants which are easily available to the common people should be carried out. This study was carried out in this context.

The use of natural products with therapeutic properties is as ancient as human civilization. Even though pharmaceutical industries have produced a number of new antibiotics in the last three decades, resistance to these drugs by microorganisms has increased.

*Cocos nucifera* Linn (Family Arecaceae), commonly known as coconut, is considered as an important fruit crop in the tropical countries.

Alcoholic extract of ripe dried coconut shell has anti-fungal activity against *Micro sporumcanis*, *M. gypseum*, *M. audouinii*, *Trichophyton mentagrophytes*, *T. rubrum*, *T. tonsurans* and *T. violaceum*. The activity was mainly attributed to the high content of phenolic compounds<sup>4</sup>. Plant phenols form an important group of natural antioxidants and some of them are potent antimicrobial compounds. Plants generally produce such antimicrobial compounds to protect themselves from biotic attack and this is essential for their microbial infection resistance. Every part of coconut is useful & its shell is *Seetala* and *Mootrala*. The *Lepana* with shell of coconut in water is said to be very effective in *Mukhadoooshika*<sup>1</sup>, but this treatment is not properly explored or documented.

*Mukhadoooshika* is a condition which comes under *kshudra roga* according to *Ayurveda*. It is a *Pidaka* resembling the thorns of *Salmali* tree and is painful, thick and contains fat inside that appears in face of youth. It occurs due to aggravation of *Kapha*, *Vatha* & *Rakta*.<sup>2</sup> It can be correlated with *Acne vulgaris* & it is a very common facial rash occurring in adolescence & frequently continuing to early and middle life<sup>5</sup>. Apart from scarring, its main effects are psychological, such as reduced self esteem and in some cases depression or in extremely rare cases suicide. Early and aggressive treatment is therefore advocated to reduce the overall long term impact to individuals.<sup>3</sup>

There are ample remedies available for *Mukhadoooshika* in the market but the cost factor of

many such formulations inspire for further investigation in this field. *Narikelasukthi* is an easily available and safe drug which is economical also. The scientific information on such drugs are sometimes lost or forgotten and such drugs are sometimes not used in treatments due to the lack of proper evaluation & documentation of their efficacy. Therefore this study was intended to evaluate the efficacy of *Narikelasukthi* on *Mukhadoooshika* with special reference to *Acne vulgaris*.

### Methods

The Botanically identified samples of *Cocos nucifera* Linn (*Narikelasukthi*) were subjected to both macroscopic and microscopic evaluation. Fine powder of coconut shell was prepared in AK Exports mill, Salem, Tamilnadu.

*Cocos nucifera* Linn (*Narikelasukthi*) shell powder was subjected to various analyses, such as determination of moisture content, ash value, acid insoluble ash, water soluble ash etc.

Along with the physiochemical study of the drug, preliminary phytochemical study of the drug was also carried out to test the presence of proteins carbohydrates, tannins, flavonoid etc. Clinical study was carried out on patients suffering from the condition *Acne vulgaris* (*Mukhadoooshika*). For this the patients were selected from the OPD of Alva's Ayurveda Medical College hospital, Moodbidri.

### INVESTIGATIONS:

Hb, ESR if necessary

### STUDY DESIGN:

Patients of both sex presenting with signs and symptoms of *Mukhadoooshika* according to the *Ayurvedic* texts will be selected for the study.

### INCLUSION CRITERIA

1. Patients fulfilling the diagnostic criteria of *Mukhadoooshika* will be randomly selected irrespective of sex, religion and occupation
2. Patient of age between 12 to 30 years.

### EXCLUSION CRITERIA

1. Patients having local wound and infection
2. Patients having acne other than face

Patients were examined at an interval of 7 days. Follow up with an intervention of once in 15 days for one month

**Table 1:** Treatment schedule

Particulars	Details
Sample size	20
Drug	<i>Cocos nucifera</i> Linn (Narikela sukthi)
Form of medication	Choorna (powder)
Dose	Sufficient quantity
Mode of application	external
Duration of study	15 days

### Statistical Analysis of the Result

The information gathered on the basis of above observations was subjected to statistical analysis using SPSS VER.20. Arithmetic mean (AM), standard deviation (SD), mean difference (MD), frequencies and percentages were used for summarizing the collected data. Paired t-test was done for analyzing the before and after effect of therapy. The results having p value < 0.05 is considered as statistically significant and < 0.01 is considered as highly significant in this study.

### RESULT

**Table 2:** Physico-chemical analysis of powder of *Narikelasukthi*

Sl. No	Experiments	Percentage
1.	Moisture content	3.2 %
2.	pH	5.3
3.	Total ash	3.62%
4.	Acid Insoluble ash	3.5 %
5.	Water Insoluble Ash	5.6 %

**Table 3:** Determination of Extractive values

The Extractive Values in Different Solvents	Percentage of Extract of <i>Narikela sukthi</i> ( <i>Cocos nucifera</i> . Linn)
Water	13.28%
Ethanol	16.73%
Methanol	15.37%
Chloroform	9.45%
Petroleum Ether	5.68%
Acetone	12.56%

**Table 4:** Ash analysis

Results of Ash analysis components	<i>Cocos nucifera</i> Linn.
Carbonates	Absent
Fluorides	Absent
Chlorides	Absent
Sulphates	Absent
Chromates	Absent
Phosphates	Absent
Potassium	Absent
Sodium	Present
Aluminium	Absent
Calcium	Absent

**Table 5:** Results of preliminary phytochemical tests for *Cocos nucifera* Linn.

Components	result
Alkaloids	absent
Steroids	present
Carbohydrate	present
Tannin	present
Flavonoids	absent
Saponins	present
Triterpenoids	absent
Resin	present
Protein	present
Starch	absent

### Clinical study

The basis for the assessment of the results was the response shown by the patient on signs and symptoms of the *Mukhadoooshika*. For the assessment of effect of treatment, subjective and objective parameters were considered such as *Vedana*, *Kandu*, *Vaivarnya*, *Srava*. The effect of the *Cocos nucifera* Linn in signs and symptoms of *Mukhadoooshika* on 7<sup>th</sup> and 15<sup>th</sup> day of treatment were computed. Finally, the overall effect of the treatment was computed.

**Table 6:** Assessment Criteria

Assessment criteria	Gradation index			
	0	1	2	3
Vedana	Absent	mild	Moderate	severe
Kandu	Absent	Occasionally	Frequently	constantly
Vaivarnya	Absent	mild	moderate	severe
Srava	Absent	whitish	yellowish	reddish

**Table 7:** Effects of *Cocos nucifera* Linn. in symptoms of *Mukhadooshika* at 7<sup>th</sup> day

SYMPTOMS	BT	7th day	BT- 7th day	% of Relief	SD (±)	SE (±)	t value	P Value
<i>Vedana</i>	2.600	1.700	0.900	34%	0.308	0.0688	19.077	<0.001
<i>Kandu</i>	2.550	1.650	0.900	35%	0.447	0.1000	9	<0.001
<i>Vaivarnya</i>	2.200	1.450	0.750	34%	0.444	0.0993	7.550	<0.001
<i>Srava</i>	1.600	1.650	0.550	34%	0.510	0.114	4.819	<0.001

There is statistically significant change in signs and symptoms. In *Vedana* there was 34% change, *Kandu* 35%, in *Vaivarnya* 34%, *Srava* 34%, as shown in the

Table No 7. The drug *Cocos nucifera*. Linn showed highly significant effect on examination parameters with P <0.001

**Table 8:** Effects of *Cocos nucifera* Linn. in symptoms of *Mukhadooshika* at 15<sup>th</sup> day

SYMPTOMS	BT	AT	BT- AT	% of Relief	SD (±)	SE (±)	t value	P Value
<i>Vedana</i>	2.600	0.950	1.0650	41%	0.587	0.131	12.568	<0.001
<i>Kandu</i>	2.550	0.950	1.600	62%	0.598	0.134	11.961	<0.001
<i>Vaivarnya</i>	2.200	0.800	1.400	63%	0.681	0.152	9.200	<0.001
<i>Srava</i>	1.600	0.650	0.950	59%	0.605	0.135	7.025	<0.001

There is statistically significant change in signs and symptoms. In *Vedana* there was 41% change, *Kandu* 62%, in *Vaivarnya* 63%, *Srava* 59%, as shown in the Table No 8 and the drug showed highly significant effect on examination parameters with P<0.001

*Bhavaprakasa nighantu*, *Rajanighantu*, *Dhanwanthari nighantu* etc. In *Caraka Samhitha* it is mentioned in the treatment of *paithika chardi*. In *Chakradatta*, *Narikela* is mentioned in *Sula Chikitsadhikaara*. *Bhava prakasa* mentioned *Narikela* for the treatment of *Amlapitha*. For *Vrana* and *Krimiroga Vaidyamanorama* mentions its usage. *Vrundamaadhava* explains its application in *Vipadika* and *Suryavartha*. Reference regarding the drug *Narikela* is available in *Brihatrayees* and *Laghutrayees*. *Narikela* is recognized in the period of different *Nighantus* too. According to *Bhavaprakashanighantu*, *Narikela* is having *Madhura rasa*; *Guru Snigdha – Guna*, *Seeta-Virya*; *MadhuraVipaka*; and the posses *VathaPithaShamaka* property<sup>6</sup>. It got synonyms such as *Skandha Phala*, *Sadaphala*, *Rasaphala*, *Drudhaphala*, *Mahaphala*,

**Table 9:** Overall effect of *Narikela sukthi* (*Cocos nucifera* Linn) *choorna* in *Mukhadooshika*

Effect of Therapy	Sample	%
Markedly Relief 75- 100% relief	11	55 %
Moderate Relief 50-75 % Relief	4	20 %
Mild relief 25- 50% Relief	4	20 %
No relief < 25%	1	5 %

## DISCUSSION

References regarding *Narikela* are found in classical texts like *Susrutha samhitha*, *Caraka samhitha*, *Ashtanga hrudaya*, *Kaiyadeva nighantu*,

*Koorchasirshaka, Thoysgarbha, Nilatharu, Thunga, Chocha, Trunaraaja, Dakshinatyaya*<sup>7</sup>. The synonyms which are mentioned mainly denote its botanical description and specific therapeutic efficacy.

The word Acne refers to youth or the prime period of the life. Acne is a condition specifically related to young age and it affects the person during mostly youthful which is the beautiful period of life<sup>8</sup>. In modern dermatology, a similar type of skin disorder or precisely sebaceous gland disorder named Acne vulgaris or Acne is found to have parity with the disease *Mukha dooshika* mentioned in *Ayurvedic* texts.

In the present study preliminary phytochemical tests for primary and secondary metabolites were carried out on water, ethanol, methanol, ether, chloroform and acetone extracts and on the ash which has been obtained of *Narikela (Cocos nucifera* Linn.) shell.

Preliminary phytochemical study shows the presence of Proteins, Carbohydrates, Tannins, Saponin, steroids and resin. Ash analysis showed the presence of inorganic chemical sodium. pH of the drug has been evaluated as 5.3 which is acidic.

#### **Probable mode of action**

As shell of *Cocos nucifera* Linn. is *Kashaya rasa*, it help to reduce *Kapha*. *Kashyaya Rasa* is *Twachya* and it is indicated in *Twak Vikaras* and it results in reduction of the symptom *Kandu*. Due to *Snigdha & Guru Guna* it act as *Vatha Samaka* and help to reduce *Vedana*. Due to *Kashaya* and *Madhura Rasa*, *Snigdha Guna* and *Seeta Virya*, it act as *Pitha Samaka* and help to reduce *Vaivarnya*. *Madhura rasa* act as *Twak Prasadana* and *Varnya*. *Snigdha Guna* provides tonicity to tissues and it act as *Varnya*. In *Srava*, *Kashaya* and *Madhura rasa* and *Seetha Virya* of the drug which help to reduce *Pitha*.

A study becomes essential to explore the efficacy of the drug in curing a particular disorder because this helps to assess the benefits and to assess up to what extent the diseases can be managed with that particular drug.

In clinical study patients were selected randomly between the age group of 12 to 30 years of either sex. Total 20 patients of *Mukhadooshika* were treated with

*Narikela sukthi choorna* given in powder form for *Lepana* externally and the data obtained is presented systematically.

#### **OBSERVATIONS**

**Signs and symptoms:** In this study, 100% (20 pts) of patients had *Vedana and Kandu*, 97.5 % (39) patients had *Vaivarnya*, 90% (36) had *Srava*. In this study the assessment of patients was done before treatment, 7<sup>th</sup> day and after treatment. All the cardinal signs and symptoms were scored according to the severity grade. The clinical response of the therapy was assessed on the basis of change in the severity score after the treatment.

#### **EFFECT OF THERAPY ON CHIEF COMPLAINTS**

##### ***Vedana***

*Vedana* was reduced up to 63.4% which was statistically found highly significant (<0.001). *Vedana* is caused by the *Vata Dosh*. Due to *Madhura Rasa* and *Madhura Vipaka* of the trail drug it act as *Vatha Samaka* and causes reduction of the *Vedana*

##### ***Kandu***

*kandu* was reduced up to 62.7% which was statistically found highly significant (<0.001). *Kandu* is caused by *Kapha Dosh*. Due to *Kashaya Rasa* it act as *Kapha Samaka* and causes reduction in the symptom of *Kandu*

##### ***Vaivarnya***

*Vaivarnya* was reduced up to 63.63% which was statistically found highly significant (<0.001). *Vaivarnya* is caused by *Pitha dosha*. Due to *Kashaya* and *Madhura* and *Seeta virya* it act as *Pitha Samaka* and causes reduction in the symptom of *Vaivarnya*

##### ***Srava***

*Srava* was reduced up to 59.37% which was statistically found highly significant (<0.001). *Srava* is caused by *Pitha dosha*. Due to *kashaya* and *Madhura* and *Seeta virya* it act as *Pitha Samaka* and causes reduction in the symptom of *Srava*.

The effect of *Nalikera sukthi choorna* on various signs and symptoms mentioned above on 7<sup>th</sup> day and on 15<sup>th</sup> day have showed that it is statistically significant in the disease *Mukhadooshika*. On 7<sup>th</sup> day there was 34% relief in *Vedana*, 35% relief in *Kandu*, 34% in

*Vaivarnya* 34% in *Srava*. On the 15<sup>th</sup> day there was marked increase in the percentage of relief such as 41% relief in *Vedana*, 62% relief in *Kandu*, 63% relief in *Vaivarnya*, 59% relief in *Srava*. So 55% got markedly relief (75-100% relief) and 20% got moderately improved (50-75% relief) and 20% got mild improvement (25-50% relief) and 5% had no change at all (< 25%)

Consideration of overall effect of therapies after 15 days of treatment, this data shows that the drug *Cocos nucifera*. Linn has given good result. Even though there was no complete cure of disease in trial group, considering the chronicity of disease and small study period the obtained result was highly significant.

## CONCLUSION

The *Cocos nucifera* Linn (*Narikelasukthi*) shell powder was studied for its pharmacognostical, phytochemical, pharmacological aspects and clinical evaluation of the drug in disease *Mukhadooshika* was carried out. In preliminary phytochemical study steroids, Carbohydrates, tannins, saponins, protein and resin were detected. Patients showed statistically significant response in all symptoms of *Mukhadooshika* such as *Vedana*, *Kandu*, *Vaivarnya* and *Srava*. No adverse effects of the drugs were observed during the trial in both groups and It provides symptomatic relief within 15days of treatment. Based on result of this study, it can be concluded that the drug *Cocos nucifera* Linn has the immense value in the treatment of *Mukhadooshika*. There were no untoward manifestations associated with the use of *Nalikera sukthi choorna* and it is found to be helpful in arresting *Mukhadooshika* and found good acceptability by all treated patients.

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