WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 12, Issue 21, 1135-1144. Research Article ISSN 2277–7105

A CLINICAL STUDY TO EVALUATE THE EFFECT OF SHELL OF COCONUT (*NARIKELA) (COCOS NUCIFERA* LINN.) DECOCTION IN HYPERLIPIDEMIA W. S. R TO *SHONITHA ABHISHYANDA*

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Article Received on
20 October 2023,
Revised on 10 Nov. 2023,
Accepted on 30 Nov. 2023
DOI: 10.20959/wjpr202321-30470

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ABSTRACT

Introduction: Ayurveda, an ancient system of medicine originated in India, which emphasizes the use of local flora for the management of various ailments. Many folklore healers rely on locally available plants for their treatment practices. *Cocos nucifera* Linn., is a such drug that is extensively used for both medicinal and culinary purposes which is referred as *Narikela* in Sanskrit. In folklore healing practices, the *Kashaya* made from the coconut shell is believed to have beneficial effects in managing Hyperlipidemia. Hyperlipidemia is a condition that is more prevalent in modern times, primarily due to lifestyle changes such as sedentary habits, unhealthy dietary patterns, and various environmental factors. It refers to elevated levels of lipids in the blood, including cholesterol and triglycerides. Hyperlipidemia is correlated with *Shonitha Abhishyanda*. **Objective:** To evaluate the clinical efficacy of Coconut Shell decoction in Hyperlipidemia w.s.r to *Shonitha Abhishyanda*. **Methodology:** The clinical study was aimed to assess the impact of the decoction on both subjective and objective parameters of Hyperlipidemia to 30 patients of either gender from the OPD and IPD of SDMCA, Udupi for 30 days. They were provided with coconut shell powder and decoction was administered internally. The study then followed up with the patients on the 15th day to evaluate subjective parameters and on the 30th day to assess both subjective and objective parameters. Statistical tests such as Paired t-test and Wilcoxon signed-rank test were employed to obtain the result. **Results:** In the study there was highly significant reductions in body weight, BMI,

Cholesterol, LDL, reduction in general weakness, heaviness, and a significant reduction in SGOT levels. **Conclusion:** The clinical study revealed statistically significant results regarding the usage of Coconut shell *Kashaya* internally and had positive effects on various parameters in the study participants.

KEYWORDS: *Narikela; Shonitha Abhishyanda;* Clinical study.

INTRODUCTION

Ayurveda is an ancient science that has been practiced for thousands of years and is considered as one of the oldest healthcare systems in the world. It emphasizes the importance of maintaining harmony with nature and living in accordance with one's individual constitution or Dosha. In many households, Ayurvedic principles are still followed, even if people may not explicitly identify them as such. For example, the use of various herbs and spices in cooking, the practice of yoga and meditation, and the reliance on natural remedies for common ailments are all influenced by Ayurvedic principles. Additionally, Ayurveda has gained popularity globally and is practiced and integrated into healthcare systems in many parts of the world.

It is important to note that Ayurveda has a rich history and has contributed significantly to traditional medicine. As with any healthcare system, people rely on evidence-based practices, so it becomes important to prove the efficacy of drug in any medical conditions through experiments and trails. Hence, traditional medicines which were being used by folklore practitioners demands validation. One such drug which is being used by the folklore practitioners is Coconut shell which is termed as *Narikela*,[1] in Sanskrit. The drug Coconut which is botanically identified as *Cocos nucifera* Linn.[2] belonging to the family Arecaceae.[3] It is documented in the epic literatures of Puranas and even in the Brihatrayees and Nighantus.[4,5,6,7] Narikela is said to be *Brimhana, Bastishodaka, Tarpana* etc. according to the Nighantus.[8,9,10] Coconut shell decoction is used by folklore practitioners of Kerala in the condition of Hyperlipidemia.[11] Hyperlipidemia is one such condition which may lead to atherosclerosis, coronary heart diseases, etc.[12] Hyperlipidemia is usually found out through medical investigations and mostly people with this condition will be presenting with complaints of usually increased weight (not mandatory), perspiration, heaviness of the body etc. Hyperlipidemia can be correlated with *Shonitha Abhishyanda.*[13]

METHODOLOGY

30 patients diagnosed as Hyperlipidemia were selected for drug trial from the OPD and IPD of S. D. M. Ayurveda Hospital, Kuthpady, Udupi for 30 days A special case proforma was prepared which included the details of history taking, physical signs and symptoms as mentioned in Ayurvedic classical texts and Allied sciences. Data were collected along with the results for the comparison of Before and After treatment.

Design of the Clinical study

- Study Type – Single blind
- Interventional Model- Single group assignment
- Design – Pre-test and Post-test Design
- Duration of Treatment – 30 days
- Primary Purpose – Treatment
- Endpoint Classification – Efficacy study
- Follow up – Once in 15 days

Inclusion criteria

- Patient diagnosed with elevated Lipid profile.
- Patient between age group of 18 -70 years.

Exclusion criteria

- Patient having other systemic illness.
- Any other acute illness that intervenes or affects the present study will be excluded.
- Patient who is under medication.
- Patient having cardiac problem, malignancy.

Dosage

- 100ml of Fresh coconut shell decoction is administered - before food in the morning and after food in the night added with *Jeeraka* as *Anupana.*

Fig. 1: Coconut shell powder.

Assessment criteria: Signs and symptoms of Hyperlipidemia will be evaluated based on objective and subjective parameters.

A. Objective parameters

1. Weight
2. BMI
3. Biochemical analysis:

a. Lipid profile values.

✓ Total cholesterol >200 mg/dl

✓ Triglycerides >150 mg/dl

✓ LDL cholesterol >100 mg/dl

✓ HDL cholesterol <40 mg/dl

b. Liver Function Test

- SGOT
- SGPT

c. Hemoglobin

d. Serum creatinine

B. Subjective parameters

1) Thirst

2) Perspiration

3) Appetite

4) General weakness.

5) Heaviness

RESULT

1. Effect on Bodyweight

Table 1: Showing the effect on Bodyweight.

Body weight	Mean Score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	T	P	
BT	71.93	30	0.40	0.55	10.01	1.82	3.24	0.003	S
15th Day	71.53	30			9.95	1.81			
BT	71.93	30	1.76	2.44	10.01	1.82	10.34	.000	HS
AT	70.16	30			9.87	1.80			

2. Effect on Body Mass Index

Table 2: Showing the effect on Body mass Index.

Body Mass Index	Mean Score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	26.55	30	0.14	0.52	3.00	0.54	3.22	.003	S
15th Day	26.41	30			3.00	0.54			
BT	26.55	30	0.64	2.41	3.00	0.54	10.70	.000	HS
AT	25.91	30			2.99	0.54			

3. Effect on Cholesterol

Table 3: Showing the effect on Cholesterol.

Cholesterol	Meanscore	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	244.35	30	21.82	8.92	50.11	9.14	5.46	.000	HS
AT	222.53	30			50.89	9.29			

4. Effect on Triglycerides

Table 4: Showing the effect on Triglycerides.

Triglyceride	Mean score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	198.88	30	11.34	5.70	74.86	13.66	1.44	0.158	NS
AT	187.54	30			98.60	18.00			

5. Effect on HDL

Table 5: Showing the effect on HDL.

HDL	Meanscore	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	47.82	30	2.73	5.70	10.78	1.96	3.04	.005	S
AT	45.09	30			10.02	1.82			

6. Effect on LDL

Table 6: Showing the effect on LDL.

LDL	Mean score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	156.54	30	14.23	9	40.95	7.47	5.650	.000	HS
AT	142.31	30			39.18	7.15			

7. Effect on SGOT

Table 7: Showing the effect on SGOT.

SGOT	Mean score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	31.94	30	0.85	2.6	10.39	1.89	3.128	0.004	S
AT	31.09	30			10.11	1.84			

8. Effect on SGPT

Table no. 8: Showing the effect on SGPT

SGPT	Mean score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	35.06	30	0.74	2.1	20.60	3.76	1.753	0.090	NS
AT	34.31	30			20.50	3.74			

9. Effect on Hb%

Table no. 9: Showing the effect on Hb%

Hb%	Mean score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	t	P	
BT	13.13	30	-0.038	0.2	1.29	0.23	-1.152	0.259	NS
AT	13.17	30			1.21	0.22			

10. Effect on Serum Creatinine

Table 10: Showing the effect on Serum creatinine.

Serum creatinine	Mean score	N	Difference in means	Paired t-test					Interpretation
				% of Change	S. D	S.E.M	T	P	
BT	0.796	30	0.006	0.75	0.305	0.50	.528	0.60	NS
AT	0.790	30			0.303	0.55			

11. Effect on Thirst

Table 11: Showing the effect on Thirst within the group.

Parameter	Negative rank			Positive rank			Ties	Total	Z value	P value	Interpretation
	N	MR	SR	N	MR	SR					
Thirst BT-15TH DAY	0	0.00	0.00	1	1.00	1.00	3	4	-1.000	0.317	NS
Thirst BT-AT	0	0.00	0.00	3	2.00	6.00	0	4	-1.732	0.083	NS

12. Effect on Perspiration

Table 12: Showing the effect on Perspiration within the group.

Parameter	Negative rank			Positive rank			Ties	Total	Z value	P value	Interpretation
	N	MR	SR	N	MR	SR					
Perspiration BT-15TH DAY	0	0.00	0.00	3	2.00	6.00	7	10	-1.732	0.083	NS
Perspiration BT-AT	0	0.00	0.00	10	5.50	55.00	0	10	-3.162	0.002	HS

13. Effect on Appetite

Table 13: Showing the effect on Appetite within the group.

Parameter	Negative rank			Positive rank			Ties	Total	Z value	P value	Interpretation
	N	MR	SR	N	MR	SR					
Appetite BT-15TH DAY	2	1.50	3.00	0	0.00	0.00	26	28	-1.414	0.157	NS
Appetite BT-AT	3	2.00	6.00	0	0.00	0.00	25	28	-1.732	0.083	NS

14. Effect on General weakness

Table 14: Showing the effect on General weakness within the group.

Parameter	Negative rank			Positive rank			Ties	Total	Z value	P value	Interpretation
	N	MR	SR	N	MR	SR					
General Weakness BT-15TH DAY	0	0.00	0.00	5	3.00	15.00	8	13	-2.236	0.025	S
General Weakness BT-AT	1	.00	.00	13	7.00	91.00	0	13	-3.606	0.000	HS

15. Effect on Heaviness

Table 15: Showing the effect on Heaviness within the group.

Parameter	Negative rank			Positive rank			Ties	Total	Z Value	P value	Interpretation
	N	MR	SR	N	MR	SR					
Heaviness BT-15TH	0	0.00	0.00	13	7.00	91.00	6	19	-3.606	0.000	HS

DAY											
Heaviness BT-AT	0	0.00	0.00	18	9.50	171.00	1	19	-4.243	0.000	HS

DISCUSSION

The action of a *Dravya* is not solely determined by their qualities (*Guna Prabhavat*) but also by their nature (*Dravya Prabhavat*) and the combination of both their substance and quality (*Dravya Guna Prabhavat).* The effectiveness of a substance is influenced by various factors, including the potency (how effective it is), the place or organ in which it acts, the time at which it is administered, the mode or method of administration, and the desired outcome.

Shonitha Abhishyanda is caused by increased *Kapha* and *Medas*, due to indulgence in the *Santarpana* type of lifestyle. Further indulgence in the same *Nidhanas* will lead into overweight or obesity. As such the properties of coconut shell is not recorded in any of the literatures. But when analysed for *Rasa* it exhibited *Kashaya* and *Tiktha* as its *Pradhana Rasa*. *Kashaya Rasa* is known for its *Ruksha* properties and can potentially aid in reducing excessive of *Kapha* and *Medo Dhatu.* Similarly, *Tikta Rasa* also does the *Kleda* and *Meda Shoshana. Tiktha Rasa* exhibit properties such as *Deepana, Pachana* and *Rochana Karma* which can be beneficial in the present condition. Additionally, both *Rasas* possess *Ruksha Guna* which counteracts the *Snigdha Guna* of *Kapha and Medas*. *Vayu Mahabhutha* being common in *Kashaya* and *Tiktha Rasa* having *Guna* like *Laghu, Ruksha, Khara, Vishada, Sukshma* which are beneficial in *Kapha Pradhana Vyadis.* Through the *Veerya* assessment it was found the drug possessed with *Ushna Veerya*, which contributes to its *Pachana, Vilayana* and *Kapha Shamaka Karmas.* Pharmacological studies proved Coconut shell to have about eleven main phytochemicals like dodecanoic acid, tetradecanoic acid, pentadecanoic acid, hexadecanoic acid, and squalene among which hexadecanoic acid, and squalene were reported with hypocholesterolemic activity.[14] *Jeeraka* has got the *Deepana, Pachana* action and is beneficial in *Adhmana*. Hence, helpful in bioavailability of the drug.

CONCLUSION

The study showed significant change in reducing body weight in obese patient and BMI. Highly significant changes were observed in reducing cholesterol and LDL. As a part of toxicity over Kidney and Liver SGOT, SGPT and Serum creatinine was done which showed no changes proving it to be potent drug in administration. It was observed that there was

improvement in the Hemoglobin level. Highly significant result was observed with General weakness and heaviness. There were no adverse reactions observed during the study.

FUNDED: Yes.

CONFLICT OF INTEREST

No conflict of interest observed.

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