WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 10, 1196-1209. Research Article ISSN 2277–7105

# "A CLINICAL STUDY ON THE HYPOLIPIDEMIC AND ANTI-OBESITY EFFECT OF *KUSHTHA (SAUSSUREA LAPPA) CHURNA IN MEDOROGA*"

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Article Received on 24 April 2026,
Article Revised on 14 May 2026,
Article Published on 16 May 2026

https://doi.org/10.5281/zenodo.20225090

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**How to cite this Article:** Dr. Sonali Thakur*[1], Dr. Akhilesh Kumar Srivastava[2], Dr. Rashmi Srivastava[3] (2026). "A Clinical Study on the Hypolipidemic and Anti-Obesity Effect of Kushtha (Saussurea Lappa) Churna In Medoroga". World Journal of Pharmaceutical Research, 15(10), 1196–1209.


## ABSTRACT

**Background:** *Medoroga* (obesity) is a metabolic condition marked by excessive deposition of *Meda Dhatu* (adipose tissue), which in some cases can be associated with lipid imbalance or dyslipidemia. In *Ayurvedic* texts, it is described as a disorder involving *Kapha* and *Meda*, with *Agnimandya* (digestive dysfunction) as a key factor. *Kushtha* (*Saussurealappa C. B. Clarke*) is included in *Lekhaneeya Mahakashaya* and is known for its *Medohara* and *Agnivardhaka* properties. **Objectives:** To evaluate the hypolipidemic and anti-obesity effects of *Kushtha (Saussurea lappa C.B. Clarke)* in patients of *Medoroga (obesity)* over 8 weeks. **Outcome Measures:** Changes in lipid profile, BMI, waist circumference, body weight, and related clinical symptoms at baseline and 8 weeks. **Methods:** An open-label clinical study was conducted on 20 patients diagnosed with *Medoroga*. *KushthaChurna* was administered for a specific duration. Pre- and post-treatment data were collected and statistically analyzed, focusing on lipid profile and anthropometric parameters such as BMI, body weight, and waist circumference. **Results:** The study population had elevated mean

lipid levels (total cholesterol 247.45 mg/dL, triglycerides 231.85 mg/dL, LDL 137.35 mg/dL, HDL 43.7 mg/dL, VLDL 47.95 mg/dL) and were mainly in obesity class I (BMI 25–29.9 kg/m², 90%). After 8 weeks of *Kushtha* (Saussurea lappa) therapy, total cholesterol reduced by 13.23%, triglycerides by 18.33%, and LDL by 10.66%, while HDL increased by 8.98%; all changes were statistically significant ($p = 0.005$). VLDL levels remained largely unchanged. Anthropometric measures also improved significantly: BMI decreased by 4.84%, body weight by 4.62%, and waist circumference by 4.24% ($p < 0.001$), with no significant changes in blood pressure. **Conclusion:** *Kushtha* (*Saussurealappa*) demonstrated significant hypolipidemic and anti-obesity activity. It can be considered a safe and effective single-drug intervention for managing *Medoroga,* showing improvement in lipid metabolism and anthropometric indices.

**KEYWORDS**: *Medoroga,* dyslipidemia, obesity, hypertriglyceridemia, *Kushtha,* Saussurea Lappa.

## INTRODUCTION

Obesity, defined by the World Health Organization as the abnormal or excessive accumulation of fat that may impair health, is commonly assessed using the Body Mass Index (BMI). According to WHO criteria, a BMI of ≥ 25 kg/m² is classified as overweight, while a BMI of ≥ 30 kg/m² indicates obesity.[1] However, for Asian populations, the Asia–Pacific guidelines set lower thresholds due to higher risks at comparatively lower BMI levels: overweight is defined as BMI ≥ 23 kg/m² and obesity as BMI ≥ 25 kg/m².[2] These definitions highlight the increased susceptibility of Asian populations, including Indians, to obesity-related health risks.

Globally, obesity has emerged as one of the most significant public health challenges. The World Health Organization estimates that more than one billion people worldwide are living with obesity, including nearly 890 million adults and 160 million children and adolescents.[3] It is not merely a cosmetic concern but a condition strongly linked with cardiovascular diseases, type 2 diabetes, fatty liver disease, infertility, and even certain cancers.

In India too, the situation is alarming. The ICMR–INDIAB (2015) study reported that the prevalence of general obesity ranges from 11.8%–31.3% and abdominal obesity from 16.9%–36.3% across different regions.[4] This rising trend highlights the urgent need for effective strategies to address the growing burden of obesity at the population level.

In Ayurveda, obesity is referred to as *Medoroga* or *Sthaulya*, characterized by an abnormal increase in *Meda Dhatu* (adipose tissue).[5] *Meda* is further classified in the *Charaka Samhita* into *Baddha Meda*, which is immobile fat deposited in various sites and associated with disorders including obesity, and *Abaddha Meda*, which is mobile and circulates with lipids such as cholesterol and triglycerides.[6] Impairment of *Jatharagni* (digestive fire) leads to reduced metabolic activity, resulting in excessive fat accumulation. Acharya Charaka classified *Ati Sthaulya* (severe obesity) among the *Ashta Nindita Purusha* (eight undesirable body constitutions), underscoring the clinical significance of this condition in classical literature.[7] The *Lakshanas* (clinical features) described in Ayurvedic texts—such as pendulous buttocks, abdomen, and breasts (*Chala Sphik-Udara-Stana*), dyspnea (*Kshudra Shwasa*), fatigue (*Daurbalya*), excessive hunger and thirst (*Atikshudha*, *Atipipasa*), and profuse sweating (*Swedadhikya*)—closely resemble the contemporary clinical manifestations of obesity and metabolic syndrome.[8]

Despite advancements in modern medicine, current treatment options for obesity are often limited by side effects, high costs, or lack of long-term sustainability. While Ayurveda offers a holistic framework targeting the root causes of the disease, clinical evidence on the efficacy of single drugs with *Lekhaniya* (fat-reducing) properties remains scarce. In this context, the present study was designed to evaluate the hypolipidemic and anti obesity effect of *Kushtha (Saussurea lappa C.B. Clarke) Churna*. *Kushtha*, mentioned in the *Lekhaniya Mahakashaya* of *Charaka Samhita*, is traditionally recommended for conditions benefiting from *Lekhana* (scraping/reducing properties), which guided its selection for managing disorders related to Meda Dhatu.[9]

With its *Ushna* (hot), *Tikshna* (sharp), and *Ruksha* (dry) qualities and *Katu Vipaka*, *Kushtha* is considered capable of acting on *Meda Dhatu* (adipose tissue) and *Meda Dhatu Agni***,** supporting reduction of excess fat and improvement of lipid metabolism.[10] *Kushtha* naturally grows in the higher altitudes of India, particularly in the Himalayas and regions like Jammu & Kashmir**.**[11] In the present study, *Kushtha* was specifically procured from Lahaul and Spiti in Himachal Pradesh, a region known for producing authentic and uncontaminated raw drug.[12] This ensured that the material used was genuine, free from adulteration, and pharmacologically potent, thereby enhancing the reliability and relevance of the clinical outcomes obtained in this trial.

## MATERIALS AND METHODS

### Ethics compliance

The Institutional Ethics Committee of Rajiv Gandhi Govt Post Graduate Ayurveda Collegeand Hospital, Paprolaapproved the study. The study was registered with the Clinical Trial Registry of India, vide CTRI/2024/05/066641 registered on 01/05/2024

### Preparation of drug

The *Kushtha* plant was authentically procured from the Lahaul and Spiti district of Himachal Pradesh. The roots were carefully cleaned to remove any impurities and then sun-dried under hygienic conditions. After complete drying, the roots were finely powdered using a mechanical grinder. The powder was then encapsulated using a calibrated capsule-filling machine, with each capsule containing 500 mg of *Kushtha Churna*, ensuring uniform dosage. The filled capsules were packed into clean, labelled bottles for further use.

The drug was sent to DTL (drug testing laboratory) and drug testing certificate was obtained. (FIG. 1& 2)

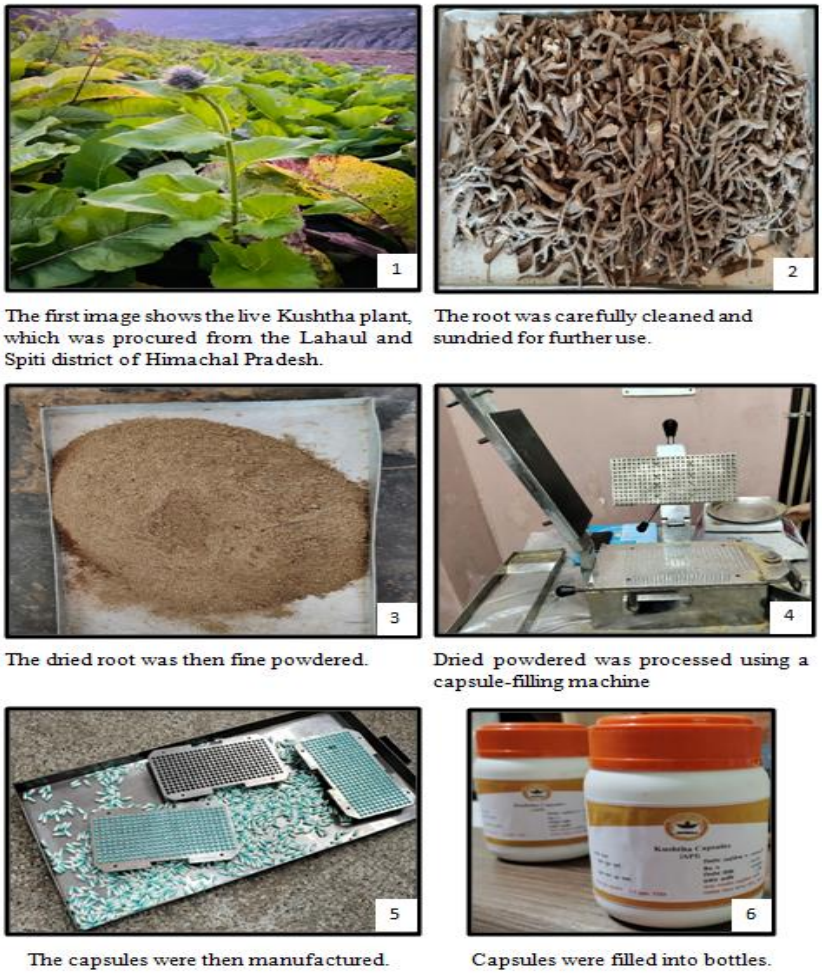



**Fig. 1**

The drug was sent to DTL, Joginder nagar and drug testing certificate was obtained.

**DRUG TESTING LABORATORY RIISM, JOGINDERNAGAR**
**(DEPARTMENT OF AYUSH HIMACHAL PRDEASH)**
**Telephone No: 01908-222092**

No. DTL/PP/15/22- 858 Dated 05/07/2023

***Report of Tests or Analysis***

| | | |
|---|---|---|
| 1. | Name of the Manufacturer | **Govt. Ayurvedic Pharmacy Paprola Distt. Kangra H.P.** |
| 2. | Manufacturer License No. | HP-87-Ay |
| 3. | Reference No. & Date of receipt letter : | 17/06/2023 |
| 4. | Date of receipt of sample: | 17/06/2023 |
| | Detail of Drug / Raw Material | **KUSHTA CAPSULE** |
| 5. | Detail of raw material /final product as obtained from the manufacturer | Ayurvedic Medicine |
| a) | Original Manufacturer's name in case of raw material & drugs repacked | |
| b) | Batch No | **R-1/23** |
| | Total quantity represented by the sample | 50 gm |
| c) | Date of Manufacture if any | 12/055/2023 |
| d) | Date of expiry if any | Three years from the date of manufacturing |

**RESULTS OF Tests/Analysis WITH PROTOCOLS OF TEST APPLIED**
As per ASU Pharmacopoeia /other specific Standards

| *Sr. No* | *Test* | **Lab. Standards** | *DTL Result* | *Remarks* |
|---|---|---|---|---|
| | **MACROSCOPIC & PHYSICOCHEMICAL DESCRIPTION** | | | |
| 1. | Appearance | -------- | Capsule ( White+ Sky blue) | -------- |
| 2. | Powder Color | -------- | Creamish | -------- |
| 3. | Odor | -------- | Characteristics, Aromatic | -------- |
| 4. | Taste | -------- | Bitter | -------- |
| 5. | pH(1.0% Aq. Soln.) | -------- | 6.36 | -------- |
| 6. | Average fill weight | -------- | 431 mg | -------- |
| 7. | Moisture content | -------- | 12.46 % | -------- |
| 8. | Total Solid | -------- | 87.54 % | -------- |
| 9. | Total Ash | -------- | 05.76 % | -------- |
| 10. | Acid insoluble ash | -------- | 01.34 % | -------- |
| 11. | Water soluble Extractive | -------- | 39.76 % | -------- |
| 12. | Alcohol soluble Extractive | -------- | 30.81% | -------- |
| | **Identification Tests :** | | | |
| 13. | **Qualitative Test** | | +ve test for Alk | |
| 14. | **Thin Layer Chromatography** | **Solvent System** Tol:EA:FA 10 % $H_2SO_4$ Spray | **Rf. Values** 0.27,0.41,0.62,0.76,0.80,0.95 | Shows the presence of Kushta |

The above mentioned tests are conducted as desired by the PG Scholar.

(Signature of the person In charge of Testing)

**Fig 2**

### Selection of patients

The study included 20 patients meeting the diagnostic criteria for *Medoroga*. As a pilot/open-label exploratory study, formal sample size calculation was not performed. Written informed consent was obtained, and the prescribed intervention (*Kushtha Churna*) was administered to all participants to evaluate its hypolipidemic and anti-obesity effects.

### Drug administration

Patients received *Kushtha (Saussurea lappa) Churna* in 500 mg capsules, with a dose of two capsules twice daily (B.D.), administered orally with lukewarm water on an empty

stomach.[13] The trial duration was 8 weeks, with follow-up assessments conducted every 15 days until completion. Patients continued their usual diet and lifestyle, as no specific modifications were advised to evaluate *Kushtha Churna* as a standalone intervention. Compliance was monitored by asking patients at each visit whether they were taking the capsules daily as instructed. No adverse or serious events were reported during the study. Safety was assessed clinically through patient-reported symptoms and physical examination, and the absence of adverse effects, along with *Kushtha's* traditional use, indicates good clinical tolerability.

**Table no. 1 Criteria for selection of patients.**

| Criteria | Details |
|---|---|
| **Diagnostic criteria** | 1.Serum Lipid profile **(**elevation in any one of the parameters)<br>S. Cholesterol > 200 mg/dL<br>S. Triglycerides > 150 mg/dL<br>LDL> 130 mg/dL<br>HDL< 40 mg/dL in males<br>< 50 mg/dL in females<br>VLDL>30 mg/dL<br>2. Body Mass Index – BMI ≥ 25 (WHO Asia- pacific criteria |
| **Inclusion Criteria** | - Patients who fulfilled the diagnostic criteria<br>- Patients willing to participate in the trial<br>- Patients aged 18–70 years |
| **Exclusion Criteria** | - Patients with nephrotic syndrome, hypothyroidism, jaundice, hepatitis, chronic infections, or other serious diseases<br>- Patients unwilling to participate<br>- Patients below 18 years or above 70 years<br>- Pregnant or lactating women |
| **Criteria for Withdrawal** | - Patient chooses to withdraw from the trial<br>- Patient fails to follow-up |

**Assessment Criteria**

i. Patients were thoroughly assessed based on various subjective and objective parameters after every 15 days of the treatment.

**Subjective assessment criteria**

To enable objective evaluation and statistical analysis, a multidimensional scoring pattern was adopted for the subjective outcome measures, which included symptoms of Medoroga such as *Kshudra Shwasa* (shortness of breath), *Sandhi Shool* (pain in joints), *Pipasa Atiyoga* (excessive thirst), *Kshudha Adhikya* (excessive hunger), *Javoparodha* (lassitude), *Chala*

*Sphik Udara Stanam* (movement of body parts), *Swedabadha* (excessive sweating), *Daurgandhya* (bad odour), *Daurbalya* (debility), and *Nidradhikya* (excessive sleep).

Score was given according to the severity of symptoms.All these symptoms assessment was done by using Symptom Rating Scale as following

**Parameters Score**

Absence of symptoms - 0

Mild degree of symptoms - 1

Moderate degree of symptoms - 2

Severe degree of symptoms- 3

**Objective assessment criteria**

In the present study**,** improvement in lipid profile parameters—Total Cholesterol, Triglycerides, HDL, LDL, and VLDL, BMI, Waist circumference, weight—were considered as the primary outcome measure

1. Body Mass Index
2. Serum Lipid profile
3. Waist circumference (WC)
4. Weight

**Statistical analysis**

The data collected from observations on various clinical and laboratory parameters were quantitative in nature and were subjected to statistical analysis accordingly. Descriptive statistics, including mean values before treatment (B.T.), mean values after treatment (A.T.), standard deviation (S.D.), and standard error (S.E.), were calculated and presented in tabular form. For inferential analysis, Student's paired t-test was applied to compare pre- and post-treatment values within the group.

The level of statistical significance was interpreted as follows

- Highly Significant (H.S.): $p < 0.001$
- Significant (S.S.): $p < 0.05$
- Insignificant (I.S.): $p > 0.05$

## OBSERVATIONS

**Table No. 2 - Effect of *Kushtha churna* on Lipid Profile.**

| Sr. No. | Symptoms | Mean | | % relief | | S.D.+ | S.E.+ | 't' | 'p' | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | Diff. | %age change | | | | | |
| 1. | Total Cholesterol | 247.45 | 214.7 | 32.75 | 13.23 | 42.21 | 7.13 | 4.5 | <0.001 | HS |
| 2. | Triglycerides | 231.85 | 189.35 | 42.5 | 18.33 | 87.50 | 12.4 | 3.4 | <0.005 | SS |
| 3. | HDL | 43.7 | 48.7 | 5.03 | 8.98 | 5.75 | 1.29 | 4.32 | <0.001 | HS |
| 4. | LDL | 137.35 | 122.7 | 14.64 | 10.66 | 22.07 | 5.37 | 2.69 | <0.005 | SS |
| 5. | VLDL | 47.95 | 43.45 | 3.50 | 4.45 | 10.75 | 2.40 | 1.45 | >0.05 | IS |

**Table No. 3 - Effect of *Kushtha churna* on Objective Criteria.**

| Sr. No. | Symptoms | Mean | | % relief | | S.D.+ | S.E.+ | 't' | 'p' | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | Diff. | %age change | | | | | |
| 1. | BMI | 28.07 | 26.71 | 1.36 | 4.84 | 1.36 | 7.13 | 4.5 | <0.001 | HS |
| 2. | Weight | 71.52 | 67.90 | 3.62 | 4.62 | 3.64 | 12.4 | 3.4 | <0.005 | SS |
| 3. | Waist Circumference | 37.07 | 35.5 | 2.45 | 4.24 | 4.63 | 1.29 | 4.32 | <0.001 | HS |
| 4. | Blood Pressure (Systolic) | 125.4 | 123.5 | 0.90 | 0.77 | 22.07 | 5.37 | 2.69 | >0.05 | IS |
| 5. | Blood Pressure (Diastolic) | 88.9 | 87.6 | 1.3 | 1.46 | 10.75 | 2.40 | 1.45 | >0.05 | IS |

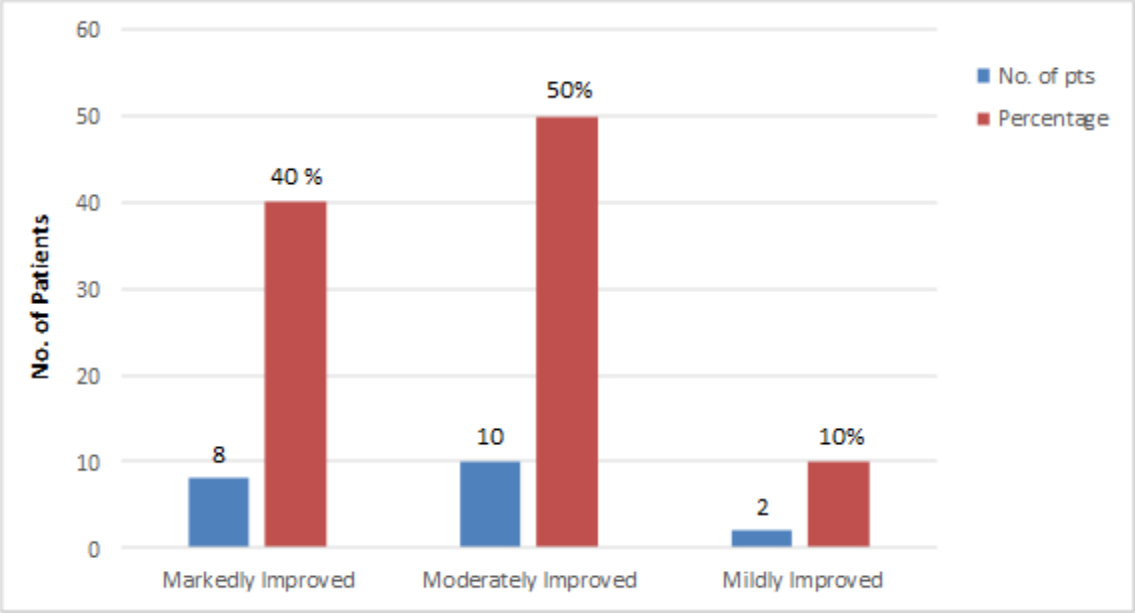
**Table No. 4 Effect of *Kushtha churna* on Subjective Criteria.**

| Sr. No. | Symptoms | Mean | | % relief | | S.D.+ | S.E.+ | 't' | 'p' | Sig |
|---|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | Diff | %age change | | | | | |
| 1. | *KshudraShwasa* (Shortness of breath) | 0.95 | 0.45 | 0.50 | 52.63% | 0.61 | 0.14 | 3.68 | <0.001 | HS |
| 2. | *Sandhi Shool* (Pain in joints) | 1.0 | 0.53 | 0.47 | 47.37% | 0.51 | 0.12 | 4.02 | <0.001 | HS |
| 3. | *Kshudha - adhikaya* (Excessive Hunger) | 1.0 | 0.8 | 0.2 | 20% | 0.69 | 0.21 | 0.68 | >0.05 | IS |
| 4. | *Pipasaatiyoga* (Excessive Thirst) | 1.0 | 0.8 | 0.2 | 20% | 0.88 | 0.21 | 0.71 | >0.05 | IS |
| 5. | *Javoparodha*(Lassitude) | 0.7 | 0.5 | 0.2 | 28.5% | 0.65 | 0.20 | 0.96 | >0.05 | IS |
| 6. | *Swedabadha* (Excessive sweating) | 0.8 | 0.7 | 0.1 | 12.5% | 0.75 | 0.23 | 0.41 | >0.05 | IS |
| 7. | *Daurgandhya* (Bad odour) | 0.6 | 0.4 | 0.2 | 33.3% | 0.41 | 0.06 | 2.92 | <0.05 | S |
| 8. | *Chala Sphik Udara Stanam* (Movement of body parts) | 0.95 | 0.55 | 0.4 | 42.11% | 0.50 | 0.11 | 3.56 | <0.01 | HS |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 9. | *Daurbalayam* (Debility) | 1.0 | 0.55 | 0.45 | 45% | 0.4 | 0.11 | 4.09 | <0.01 | HS |
| 10. | *Nidradhikya* (Excessive sleep) | 0.6 | 0.5 | 0.1 | 16% | 0.5 | 0.11 | 0.66 | >0.05 | IS |

**Table no. 5 - Effect of Kushtha Churna on Hb, TLC, ESR & FBS.**

| | MEAN BT | MEAN AT | SD.+ | SE.+ | t | P | Sig |
|---|---|---|---|---|---|---|---|
| **Hb** | 11.2 | 12.09 | 0.39 | 0.10 | 2.90 | <0.01 | S |
| **TLC** | 7200 | 7100 | 500 | 118.20 | 0.89 | >0.05 | IS |
| **ESR** | 25.05 | 23.02 | 8,05 | 1.79 | 1.12 | >0.05 | IS |
| **FBS** | 120 | 100 | 15 | 3.35 | 8.95 | <0.01 | S |




**Overall Therapeutic effect *of* *Kushtha churna* in 20 patients (Fig 3).**

## RESULT

The therapy showed a statistically significant impact on the lipid profile, which was the main assessment criterion. Total cholesterol levels reduced from a mean of 247.45 mg/dL to 214.7 mg/dL, marking a 13.23% decrease ($p< 0.001$). Triglycerides decreased by 18.33%, from 231.85 mg/dL to 189.35 mg/dL ($p< 0.005$). LDL (low-density lipoprotein) dropped by 10.66% ($p< 0.005$), while HDL (high-density lipoprotein) showed an 8.98% increase ($p< 0.001$). VLDL (very-low-density lipoprotein) levels, however, showed no significant change ($p> 0.05$).

In terms of anthropometric parameters, there was a significant reduction in BMI, body weight, and waist circumference. BMI decreased by 4.84% (from 28.07 to 26.71, $p< 0.001$),

weight by 4.62% ($p< 0.005$), and waist circumference by 4.24% ($p< 0.001$). No statistically significant changes were observed in systolic and diastolic blood pressure levels.

Regarding subjective symptoms, notable improvements were seen in *KshudraShwasa* (52.63%), *Sandhi Shoola* (47.37%), *Daurbalya* (45%), *Chala Sphik-Udara-Stana* (42.11%), and *Daurgandhya* (33.3%) with high statistical significance. Symptoms like *Kshudha-adhikya*, *Pipasaatiyoga*, *Swedabadha*, *Javoparodha*, and *Nidradhikya* showed numerical improvements, but the changes were statistically insignificant.

Blood investigations revealed a significant increase in hemoglobin levels from 11.2 g/dL to 12.09 g/dL ($p< 0.01$) and a notable reduction in fasting blood sugar from 120 mg/dL to 100 mg/dL ($p< 0.01$). No significant changes were observed in total leukocyte count (TLC) and erythrocyte sedimentation rate (ESR).

Overall assessment of therapeutic efficacy showed that out of 20 patients, 8 (40%) were markedly improved, 10 (50%) were moderately improved, and 2 (10%) were mildly improved, based on combined evaluation of subjective symptoms, anthropometric data, and lipid profile changes.

## DISCUSSION

According to classical Ayurvedic texts, the pharmacological action of any *Aushadha* (medicine) depends on its inherent *Dravya Guna* (properties), including *Rasa* (taste), *Guna* (quality), *Veerya* (potency), *Vipaka* (post-digestive effect), and *Prabhava* (specific action)(*Charaka Samhita, Sutrasthana* 26/10) According to classical *Ayurvedic* texts, when a person consumes an *Ahita Ahara* (unwholesome diet), avoids *Vyayama* **(**physical activity), or possesses certain *Sattvika, Manasika, or inherited Prakriti* (mental or constitutional) tendencies, it leads to an imbalance in *Kapha Dosha* (the principle associated with heaviness, stability, and growth) and weakens *Jatharagni* (the digestive fire responsible for processing food). (*Charaka Samhita, Sutrasthana* 14/17)

When digestion is weak, *Ama* (toxic, undigested material) is produced in the body. Simultaneously, the metabolism of *Meda Dhatu* (fat tissue) becomes sluggish, leading to excessive accumulation of fat and resulting in Obesity *(Sthaulya/Medoroga)***.** According to *Charaka Samhita, Meda* is categorized as *Baddha Meda*, which is immobile fat that accumulates in specific areas, and *Abaddha Meda*, which is mobile and circulates in the body

along with lipids such as cholesterol and triglycerides. The accumulation of *Baddha Meda* contributes to obesity, while *Abaddha Meda* explains the associated dyslipidemia, as circulating fat affects blood lipid levels.[15]

*Kushtha (Saussurea lappa C.B. Clarke)* is described in Ayurveda as having *Tikta* (bitter) and *Katu* (pungent) tastes, *Laghu* (light), *Ruksha* (dry), and *Tikshna* (sharp) qualities, with *Ushna Virya* (hot potency) and *Katu Vipaka* (pungent post-digestive effect). These pharmacological attributes collectively pacify aggravated *Kapha Dosha* and enhance digestion and metabolism.

*Katu Rasa* (pungent taste) imparts *Ruksha* (dryness) and *Tikshna* (sharpness), which help in *Ama Pachana* (digestion of toxic, undigested material) and in reducing excessive *Kleda* (bodily fluids) accumulation. The *Tikshna Guna* (sharp quality) allows deeper penetration into the tissues, facilitating the mobilization of *Meda Dhatu* (adipose tissue) and promoting *Medohara* (lipolysis or fat reduction). *Laghu Guna* (light quality) counteracts *Kapha's* heaviness, supporting *Sthaulya Nivritti* (reduction of obesity). *Ushna Virya* rekindles impaired *Jatharagni* (digestive fire), which can be correlated with improved basal metabolic activity and nutrient assimilation, particularly in the regulation of fat metabolism.

Notably, an unexpected rise in hemoglobin was observed.This may be linked to the drug's influence on *Rakta Dhatu Agni* (blood tissue metabolism). This suggests that *Kushtha* may have supported erythropoiesis and hemoglobin synthesis, indicating its potential role in correcting *Raktagni Mandya* along with *Medo Dhatu Agnimandya.* Such an effect further highlights its multidimensional metabolic action described in Ayurvedic texts.

In this clinical trial, *Kushtha Churna* produced favorable changes in lipid parameters, including reductions in total cholesterol, triglycerides, and LDL, along with increased HDL. Anthropometric improvements, such as decreased waist circumference, indicate enhanced fat metabolism. These clinically significant changes may reduce cardiovascular risk and improve insulin sensitivity. Thus, *Kushtha Churna* demonstrates hypolipidemic and metabolic balancing effects, supporting its potential role in managing *Medoroga* (obesity).

Recent scientific studies validate the *Ayurvedic* properties of *Saussurea lappa (Kushtha).* Anbu et al. demonstrated that its ethanolic extract significantly reduced serum triglyceride levels and increased HDL in hyperlipidemic rats.[16] Similarly, Marei et al. reported that

administration of Saussurea lappa to hypercholesterolemic rats led to marked reductions in serum cholesterol and oxidative stress markers.[17] Furthermore, a detailed phytochemical review by Thara and Zuhra confirmed that Kushtha contains bioactive sesquiterpene lactones such as costunolide and dehydrocostus lactone, compounds known for their anti-inflammatory, hypolipidemic, and hypoglycemic activities.[18]

*Kushtha's* function in *Medoroga* management is therefore supported by both contemporary experimental evidence and traditional *Ayurvedic* knowledge. Its potential as a safe and effective treatment for dyslipidemia and obesity is inferred from previous experimental studies and its long-standing inclusion in various classical *Ayurvedic* formulations.

This preliminary single-group study lacked a control or placebo group, and the small sample size (n=20) limits generalizability. Nonetheless, the results offer encouraging preliminary evidence of Kushtha Churna's hypolipidemic and metabolic benefits. Future research with larger, randomized controlled trials and extended follow-up is warranted to validate these findings and establish broader applicability in managing *Medoroga* and related metabolic disorders.

## CONCLUSION

The present clinical study demonstrated that *Kushtha Churna* produced favorable changes in lipid parameters, including reductions in total cholesterol, triglycerides, and LDL levels, along with an increase in HDL. It also showed improvement in anthropometric measures such as waist circumference, indicating its effect on fat metabolism. Additionally, a rise in hemoglobin levels and improvement in fasting blood sugar were noted, reflecting better metabolic regulation. Overall, *Kushtha Churna* exhibited hypolipidemic and metabolic balancing effects, suggesting its potential role in the management of *Medoroga (obesity).* However, as the study involved a small sample size, further research with larger populations and extended follow-up is recommended to validate these findings.

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