CASE REPORT

Potential Cholesterol-lowering and Antihypertensive Effects of Cinnamon Tea: A Single Case Study

S. Mohammed Nawaz1, Sivanandhini Murugesan2, K. Gayathri Devi1, Saravanan Mariappan4, Mahesh Kumar Kuppusamy5*

1Yoga and Naturopathy Physician, Sivaraj Naturopathy and Yoga Medical College and Hospital, Salem, Tamil Nadu, India.
2Associate Professor, Department of Yoga, Sivaraj Naturopathy and Yoga Medical College and Hospital, Salem, Tamil Nadu, India.
3Assistant Professor, Department of Acupuncture and Energy Medicine, Sivaraj Naturopathy and Yoga Medical College and Hospital, Salem, Tamil Nadu, India.
4Principal, Department of Anatomy, Sivaraj Naturopathy and Yoga Medical College and Hospital, Salem, Tamil Nadu, India.
5Assistant Medical Officer/Lecturer Grade II, Department of Physiology, Government Yoga and Naturopathy Medical College & Hospital, The Tamil Nadu Dr. MGR Medical University, Chennai, Tamil Nadu, India.

ABSTRACT

Hypercholesterolemia is a chronic cardiovascular condition characterized by high levels of cholesterol in the blood. Untreated hypercholesterolemia raises the risk of cardiovascular problems, necessitating effective treatment approaches. This single-case study evaluates the efficacy of cinnamon tea for a 52-year-old married man with high blood cholesterol (total cholesterol, triglycerides, low-density lipoprotein (LDL), and very-LDL). The patient presented with a history of head pain, elevated blood pressure (160/100 mmHg), and elevated blood triglyceride levels (232.6 mg/dL), diagnosed with hypertension and hypercholesterolemia. The patient was advised to consume a regular diet along with cinnamon tea for 2 months at the outpatient department of Sivaraj Naturopathy and Yoga Medical College and Hospital, Salem. Post-intervention assessments showed favorable outcomes, with a 70% symptomatic relief and a reduction in blood pressure from 160/100 mmHg to 140/90 mmHg. Notably, blood triglyceride levels decreased from 232.6 mg/dL to 176.4 mg/dL within 2 months. No serious adverse events were recorded. This single-case study reports the effectiveness of cinnamon tea in a patient with hypertension and hypercholesterolemia. The naturopathic diet with cinnamon tea demonstrated remarkable effects and changes in the recorded data. However, further large-scale studies with improved designs are needed to validate these findings.

1. INTRODUCTION

Hypercholesterolemia, characterized by elevated levels of cholesterol in the blood, is a major risk factor for cardiovascular diseases such as atherosclerosis, heart attacks, and strokes.[1] High cholesterol can be caused by factors such as unhealthy diet, obesity, lack of physical activity, smoking, diabetes, and genetic predisposition.[2] Conventional treatments for hypercholesterolemia include lipid-lowering medications such as statins, fibrates, bile acid sequestrants, and lifestyle modifications such as dietary changes and increased physical activity.[3] However, these treatments may have side effects or be ineffective in some cases, prompting the need to explore complementary and alternative therapies. Cinnamon, a commonly used spice, has gained attention for its potential cholesterol-lowering effects due to its bioactive compounds such as cinnamaldehyde, cinnamate, and polyphenolic antioxidants. Several studies have investigated the efficacy of cinnamon supplementation in improving lipid profiles, with promising but mixed results.[4,5]

2. METHODS

This single-case study aimed to evaluate the effectiveness of cinnamon tea in managing hypercholesterolemia and associated conditions in a 52-year-old male patient.

2.1. Participant Selection

The participant was a 52-year-old married man diagnosed with hypercholesterolemia and hypertension at the outpatient department of Sivaraj Naturopathy and Yoga Medical College and Hospital, Salem. He presented with a history of head pain, elevated blood...
pressure (160/100 mmHg), and high blood triglyceride levels (232.6 mg/dL).

2.2. Intervention

The participant was advised to consume a regular diet along with cinnamon tea for 2 months. The cinnamon tea was prepared by boiling 5 g of cinnamon bark and 15 g of jaggery in 200 ml of water until the volume was reduced to 100 mL. The participant consumed 100 mL of cinnamon tea in the morning (7 am–9 am) and evening (5 pm–7 pm) daily.

2.3. Outcome Measures

The primary outcome measures were blood cholesterol levels, including total cholesterol, triglycerides, high-density lipoprotein (HDL), low-density lipoprotein (LDL), and very-LDL (VLDL). Blood pressure was also monitored as a secondary outcome measure. Blood samples were collected and analyzed using standard laboratory methods at baseline (October 11, 2023) and after 2 months of intervention (March 03, 2024). Blood pressure was measured using a sphygmomanometer at the same time points.

3. RESULTS

This single-case study investigated the effects of cinnamon tea consumption on blood cholesterol levels and blood pressure in a 52-year-old man with hypercholesterolemia and hypertension. After a 2-month intervention period of consuming 100 mL of cinnamon tea twice daily (morning and evening) along with a regular diet, remarkable improvements were observed. Most notably, the patient’s elevated triglyceride levels decreased from 232.6 mg/dL to 176.4 mg/dL, a significant 24% reduction bringing levels into the normal range (<150 mg/dL). In addition, VLDL cholesterol decreased from 47 mg/dL to 35 mg/dL, now within the normal range of 80-130 mg/dL. While total cholesterol increased slightly from 162.4 mg/dL to 172.5 mg/dL post-intervention, it remained below 200 mg/dL. HDL and LDL cholesterol levels fluctuated but stayed within normal limits. Importantly, the patient’s blood pressure improved from 160/100 mmHg (Stage 2 hypertension) to 140/90 mmHg (Stage 1 hypertension). Overall, a 70% symptomatic relief was reported, with no serious adverse events recorded during the cinnamon tea intervention. The detail test report before and after treatment are mentioned below in fig 1 & Fig 2.

4. DISCUSSION

The findings of this case study suggest that cinnamon tea may have beneficial effects in managing hypercholesterolemia and hypertension. The significant reduction in triglyceride and VLDL cholesterol levels aligns with previous research demonstrating the lipid-lowering properties of cinnamon and its bioactive compounds like cinnamaldehyde. Several mechanisms have been proposed to explain cinnamon’s cholesterol-lowering effects, including inhibition of cholesterol biosynthesis, increased cholesterol excretion, and enhancement of LDL receptor activity. The polyphenolic antioxidants present in cinnamon may also contribute to its cardioprotective effects by reducing oxidative stress and inflammation. While total cholesterol levels increased slightly post-intervention, they remained within the desirable range, potentially due to the interplay of various cholesterol fractions. The observed fluctuations in HDL and LDL cholesterol levels may be attributed to individual variability or require longer intervention periods to stabilize. The improvement in blood pressure, from Stage 2 hypertension to Stage 1 hypertension, is important. Cinnamon has been reported to possess vasodilatory and antioxidant properties, which may contribute to its blood pressure-lowering effects. However, the patient’s blood pressure remained above normal levels, suggesting that cinnamon tea alone may not be sufficient for managing hypertension in some cases. It is important to note that this is a single-case study, and the results should be interpreted with caution. Individual variations in response to treatment, dietary factors, and potential confounding variables may influence the observed outcomes. In addition, the study duration of 2 months may not be sufficient to assess the long-term effects of cinnamon tea consumption on cholesterol levels and blood pressure. Larger clinical trials with longer follow-up periods and standardized cinnamon preparations are warranted to confirm the efficacy and safety of cinnamon as a complementary therapy for hypercholesterolemia and hypertension.

5. CONCLUSION

The findings of this case study suggest that cinnamon tea may have beneficial effects in managing hypercholesterolemia and hypertension, although larger clinical trials are needed to confirm its efficacy and safety.

6. ACKNOWLEDGMENT

Nil.

7. AUTHORS’ CONTRIBUTIONS

All the authors contributed equally to design and execution of the article.

8. FUNDING

Nil.

9. ETHICAL APPROVALS

This study is not required ethical clearance as it is a case study.

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

12. PUBLISHERS NOTE

This journal remains neutral with regard to jurisdictional claims in published institutional affiliation.

REFERENCES


How to cite this article:
Available from: https://irjay.com
DOI link: https://doi.org/10.48165/IRJAY.2024.70503
TESTS RESULTS

PATIENT INFORMATION
ID: 65-543
Name: M. SARVAR, D.
Age: 52 yrs. Sex: Male
Ref. By: Dr. M. MOHAMMAD NAWAZ B.R.B.V.S.

SPECIMEN INFORMATION
Sample ID: 644
Received On: 01-10-2023 16:44
Reported On: 01-10-2023 16:19

FULL TEST REPORT

HAEMATOLOGY

COMPLETE BLOOD COUNT

Hemoglobin: 14.2 g/dL, 12.6 - 16.0
Red Blood Cell Count: 5.36 x 10^6/μL, 4.0 - 5.5
Packed Cell Volume: 42.3%, 36 - 50
Mean Corpuscular Volume: 61.4 fl, 80.0 - 90.0
Mean Corpuscular Hemoglobin: 20.4 pg, 27.0 - 32.0
Mean Corpuscular Hemoglobin Concentration: 34.5 g/dL, 31.0 - 36.0
Reticulocyte Count: 2.41 x 10^6/μL, 1.5 - 4.5
Differential Count:

Neutrophils: 55.7%, 40.0 - 70.0
Lymphocytes: 27.3%, 20.6 - 40.0
Eosinophils: 04%, 0.0 - 7.0
Monocytes: 4.8%, 3.2 - 7.6
Basophils: 01%, 0.0 - 1.6
Platelets: 125,000/μL, 75,000 - 400,000

BIOCHEMISTRY

Cholesterol Total (HDL & LDL): 182.4 mg/dL, 200 - 250
Triglycerides (HDL cholesterol) 132.6 mg/dL, 200 - 250

LAB RESULTS

HDL Cholesterol: 47 mg/dL, 35 - 90
LDL Cholesterol: 110 mg/dL, 20 - 130
VLDL Cholesterol: 5 mg/dL, 0 - 0.2
Triglycerides: 110 mg/dL, 50 - 150
Calcium: 9.6 mg/dL, 8.5 - 10.5
Phosphate: 5.0 mg/dL, 2.6 - 4.6
Creatinine: 1.0 mg/dL, 0.6 - 1.5
BUN: 13.5 mg/dL, 6.5 - 21.5
Sodium: 142 mEq/L, 135 - 145
Potassium: 4.5 mEq/L, 3.5 - 5.0
Chloride: 97 mEq/L, 92 - 106
Bicarbonate: 23.0 mEq/L, 22 - 28
Glucose: 85 mg/dL, 60 - 120
Hematocrit: 47%, 35 - 52
Hemoglobin: 14.2 g/dL, 12.6 - 16.0
Platelets: 125,000/μL, 75,000 - 400,000

SHIFA CLINIC ROYAL FUNCTION HALL COMPLEX, BAZAR STREET, PERNAMBUT - 63510

LAB RESULTS

HDL Cholesterol: 47 mg/dL, 35 - 90
LDL Cholesterol: 110 mg/dL, 20 - 130
VLDL Cholesterol: 5 mg/dL, 0 - 0.2
Triglycerides: 110 mg/dL, 50 - 150
Calcium: 9.6 mg/dL, 8.5 - 10.5
Phosphate: 5.0 mg/dL, 2.6 - 4.6
Creatinine: 1.0 mg/dL, 0.6 - 1.5
BUN: 13.5 mg/dL, 6.5 - 21.5
Sodium: 142 mEq/L, 135 - 145
Potassium: 4.5 mEq/L, 3.5 - 5.0
Chloride: 97 mEq/L, 92 - 106
Bicarbonate: 23.0 mEq/L, 22 - 28
Glucose: 85 mg/dL, 60 - 120
Hematocrit: 47%, 35 - 52
Hemoglobin: 14.2 g/dL, 12.6 - 16.0
Platelets: 125,000/μL, 75,000 - 400,000

SHIFA CLINIC ROYAL FUNCTION HALL COMPLEX, BAZAR STREET, PERNAMBUT - 63510

LAB RESULTS

HDL Cholesterol: 47 mg/dL, 35 - 90
LDL Cholesterol: 110 mg/dL, 20 - 130
VLDL Cholesterol: 5 mg/dL, 0 - 0.2
Triglycerides: 110 mg/dL, 50 - 150
Calcium: 9.6 mg/dL, 8.5 - 10.5
Phosphate: 5.0 mg/dL, 2.6 - 4.6
Creatinine: 1.0 mg/dL, 0.6 - 1.5
BUN: 13.5 mg/dL, 6.5 - 21.5
Sodium: 142 mEq/L, 135 - 145
Potassium: 4.5 mEq/L, 3.5 - 5.0
Chloride: 97 mEq/L, 92 - 106
Bicarbonate: 23.0 mEq/L, 22 - 28
Glucose: 85 mg/dL, 60 - 120
Hematocrit: 47%, 35 - 52
Hemoglobin: 14.2 g/dL, 12.6 - 16.0
Platelets: 125,000/μL, 75,000 - 400,000

SHIFA CLINIC ROYAL FUNCTION HALL COMPLEX, BAZAR STREET, PERNAMBUT - 63510