

**EFFECTIVENESS OF TERMINALIA ARJUNA IN MANAGING DYSLIPIDEMIA IN A  
PULMONARY TUBERCULOSIS PATIENT: A CASE STUDY****Asgar Nazir\***

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**ABSTRACT**

**Background:** Dyslipidemia is a metabolic disorder involving elevated levels of lipids and lipoproteins, increasing the risk of atherosclerosis, coronary artery disease, and cerebrovascular diseases. A 50-year-old male with a history of pulmonary tuberculosis and hemorrhagic stroke presented with symptoms including left upper quadrant pain without radiation, palpitations, abdominal distension, and fatigue. He was diagnosed with prostatomegaly and Grade I Fatty Liver Disease. His lipid profile showed elevated triglycerides (275 mg/dL), cholesterol (210 mg/dL), LDL (120 mg/dL), and VLDL (51 mg/dL), with low HDL (35 mg/dL). Due to contraindications for conventional lipid-lowering drugs, the patient was treated with Terminalia arjuna decoction. Terminalia arjuna, known for its cardioprotective and hypolipidemic effects, contains bioactive compounds like flavonoids and triterpenoids. **Results:** After 60 days of treatment, improvements in the lipid profile were observed: triglycerides decreased from 275 mg/dL to 145 mg/dL, cholesterol from 210 mg/dL to 137 mg/dL, VLDL from 51 mg/dL to 29 mg/dL, HDL increased from 35 mg/dL to 41 mg/dL, and LDL reduced from 120 mg/dL to 90 mg/dL. **Conclusion:** Terminalia arjuna decoction effectively improved lipid profiles in this patient, providing a viable alternative to conventional lipid-lowering medications. This herbal treatment shows promise for managing dyslipidemia in patients with complex medical histories, although further research is needed to confirm its efficacy and safety.

**KEYWORDS:** Dyslipidemia, Terminalia arjuna, Herbal Medicine, Case Report.**INTRODUCTION**

Dyslipidemia is a metabolic disorder characterized by a persistent rise in plasma levels of lipids and lipoproteins, which increases the risk of atherosclerosis, coronary artery disease, and cerebrovascular diseases. This condition is often caused by unhealthy dietary habits and a sedentary lifestyle.<sup>[1]</sup> Primary lipid disorders can be categorized based on the main issue, which may include hypercholesterolemia, hypertriglyceridemia, or mixed hyperlipidemia.<sup>[2]</sup> In India, the most prevalent types of dyslipidemia are borderline high LDL cholesterol, low HDL cholesterol, and high triglycerides. In both urban and rural areas, hypercholesterolemia affects 13.9% of the population, hypertriglyceridemia affects 29.5%, low HDL-C is found in 72.3%, and high LDL-C levels are seen in 11.8%.<sup>[3]</sup> The causes of dyslipidemia can be attributed to both primary and secondary factors. Primary causes often involve single or multiple gene mutations, while secondary causes include conditions such as hypothyroidism, poorly controlled diabetes mellitus, obesity, chronic kidney disease, liver dysfunction, cholestasis, excessive alcohol consumption in susceptible individuals, anorexia nervosa, and the inappropriate use of medications such as oral contraceptives, retinoids, thiazide diuretics, corticosteroids, beta blockers, and

antiretrovirals.<sup>[4]</sup> Dyslipidemias are among the most frequently identified and managed chronic conditions. They are typically marked by abnormal levels of cholesterol, triglycerides, or both, involving irregularities in related lipoprotein types. The primary clinical consequence of dyslipidemia is an elevated risk of atherosclerotic cardiovascular disease (ASCVD), linked to high levels of total and low-density lipoprotein (LDL) cholesterol, triglycerides (TGs), and lipoprotein(a), alongside low levels of high-density lipoprotein (HDL) cholesterol.<sup>[5]</sup> Obesity and type 2 diabetes are common secondary factors that predispose individuals to these conditions. Rare dyslipidemias can also lead to additional clinical issues, such as pancreatitis from severe triglyceride elevations, liver fat accumulation, and deficiencies in fat-soluble vitamins in those with genetic impairments in apolipoprotein (apo) B-containing lipoprotein production.<sup>[6]</sup> Ongoing research into dyslipidemias is revealing more about their molecular and genetic foundations, their role in atherosclerosis development, and the effectiveness of pharmacological treatments in reducing ASCVD risk for those affected.<sup>[7]</sup>

### Need of the Study

Dyslipidemia is one of the condition of metabolic Syndrome. Life style modification and dietary changes is the effective and primary strategies for the prevention a of disease.<sup>[8]</sup> Such line of treatment is well mentioned in unani texts. Dyslipidemia leads to risk factors for atherosclerosis, coronary artery diseases, and cerebrovascular diseases. Also, there are common side effects of lipid-lowering drugs i.e. nausea, abdominal pain, muscular pain and weakness, headache, dizziness, fatigue, etc. The aim of dyslipidemia management is to prevent cardiovascular diseases. The patient in this study has a history of hemorrhagic stroke and pulmonary tuberculosis, making modern hypolipidemic drugs unsuitable. Therefore, exploring herbal lipid-lowering agents is a viable alternative to prevent these conditions and their side effects.

### CASE REPORT

A Patient of age 50 yrs with no job, who has history of pulmonary tuberculosis since 8 months and Haemorrhagic stroke 2yr ago, is on regular anti-tubercular treatment (ATT) came to outpatient

department. A patient complained mild, dull ache in the Left upper quadrant region non-radiating in nature 4months ago which is aggravated during night hours. Simultaneously, patient complaints of fatigue and palpitations on most days of week. He had associated complaint of headache and irregular bowel habits last 2 months. Patient was diagnosed with prostatomegaly and Grade I Fatty Liver Disease. He had known complaint of pulmonary tuberculosis since 8 months and take ATT. He had past H/o of CVA. Patient was obese, weight 73 kg, height 5'7" and BMI 26.4.kg/m<sup>2</sup> but well nourished. Blood pressure (B.P.) 130/77mmHg, Pulse Rate 78/min, respiratory rate 19/min, no clubbing, cyanosis, icterus. At admission, his serum triglycerides, cholesterol, LDL, HDL and VLDL are 275mg/dl, 210 mg/dl, 120mg/dl, 35mg/dl and 51 mg/dl respectively. Results of other routine laboratory findings were within normal ranges (Table 1 & 2). Chest radiography shows right apical ghons lesion, medistinal and hilar lymphadenopathy and electrocardiography was normal. Blood samples for determination of lipids were obtained at day 0<sup>th</sup> and 60<sup>th</sup> day There is improvement in lipid profile and Subjective parameters as well (Table 2).

### TIMELINE

The timeline for the current episode of care is depicted in Flowchart 1.



Flowchart 1

### DIAGNOSTIC ASSESSMENT

Diagnosis is made primarily based on the clinical presentation and criteria laid down by National Cholesterol Education Program ATP III Guidelines (NCEP).<sup>[9]</sup>

### THERAPEUTIC INTERVENTION

*Terminalia arjuna* decoction(*Joshanda Arjun Chāl*) 20ml is given twice daily orally 1 hour before food.<sup>[10-12]</sup>

### Composition of *Terminalia arjuna* decoction (*Joshanda Arjun chaal*)<sup>[10,11]</sup>

Medicine	Constituents	Mode of administration and frequency <sup>[11,12]</sup>
<i>Joshanda Arjun Chāl</i>	Decoction of <i>Terminalia arjuna</i>	20 ml two times daily 1 hour before meals for 45 days

*Terminalia arjuna*, commonly known as Arjun Chāl or White Marudah, is a medicinal plant from the Combretaceae family. In vernacular languages, it is referred to as *Arjun* in Urdu and *Arjuna* in Hindi.<sup>[11,13]</sup> *Terminalia arjuna* is renowned for its cardioprotective, antihypertensive, and hypolipidemic effects.<sup>[14]</sup> The bark contains bioactive compounds such as flavonoids (arjunolone, baicalein, luteolin, and quercetin) and triterpenoids (arjunolic acid), which contribute to its therapeutic properties.<sup>[15]</sup> The effect of *Arjun Chāl* on Lipids may be attributed to many of its therapeutic pharmacological actions such as

Hypolipidemic(*Muraqq-i-Dam*) and Demulcent (*Mulatiff*).<sup>[10]</sup> The hypolipidemic effect *Terminalia arjuna* may be due to interference with the absorption of dietary cholesterol as well as bile acids from the intestine, increased elimination of fecal sterols", and increased stimulation of bile acid synthesis may lead to an increased utilization of cellular free cholesterol.<sup>[16]</sup> Both clinical studies and animal research have demonstrated its effectiveness in managing cardiovascular disorders, lowering blood pressure, improving lipid profiles, and providing antioxidant benefits. Beyond cardiovascular health, *Terminalia*

*arjuna* shows promise in thrombolytic, antimicrobial, anthelmintic, and anti-obesity applications. Its versatility

and wide range of therapeutic effects make it valuable in both traditional and modern medicine.<sup>[14]</sup>

**Table 1: Basic laboratory investigations.**

Lab parameter	Observed value	Normal value
Hemoglobin	11.7 g/dl	12-16g/dl
RBC	4.6 million/cumm	4.5-5 million/cumm
WBC	9500 cells/cumm	5000-11000 cells/cumm
Serum urea	29 mg/dl	10-40 mg/dl
Serum creatinine	1.1mg/dl	0.30-1.30mg/dl
Serum potassium	3.9mmol/L	3.50-5.0mmol/L
Serum sodium	140mmol/L	135-145mmol/L
AST	30U/L	0-40U/L
ALT	38U/L	0-40U/L
Serum Albumin	4.5g/dl	3.5-5.5g/dl
Serum total protein	7.0g/dl	6-8 g/dl

**Table 2: Lipid profile.**

Parameters	0 <sup>th</sup> Day	60 <sup>th</sup> day
Sr.Triglycerides	275mg/dl	145mg/dl
Sr.Cholestrol	210 mg/dl	137mg/dl
VLDL	51 mg/dl	29mg/dl
HDL	35mg/dl	41mg/dl
LDL	120mg/dl	90mg/dl

## DISCUSSION

Given the patient's contraindications for conventional lipid-lowering medications due to his hemorrhagic stroke and ongoing tuberculosis treatment, an alternative approach was needed. *Terminalia arjuna* has been traditionally used for its therapeutic benefits, including improving lipid profiles and providing cardiovascular protection. The plant contains bioactive compounds such as flavonoids and triterpenoids, which are believed to contribute to its hypolipidemic effects. Clinical and animal studies have supported its efficacy in managing cardiovascular disorders, reducing blood pressure, and improving lipid profiles.<sup>[14,16]</sup> In this case, the results after 60 days of treatment were promising. The patient's lipid profile showed significant improvements: triglycerides, cholesterol, and VLDL levels decreased, while HDL and LDL levels improved. This indicates that *Terminalia arjuna* may be an effective alternative for managing dyslipidemia, especially in patients who are unable to tolerate conventional treatments. However, while the improvements observed are encouraging, it is important to approach these findings with caution. The positive outcomes in this case highlight the potential of *Terminalia arjuna* as a viable alternative for lipid management.

## CONCLUSION

This case report demonstrates that *Terminalia arjuna* decoction effectively improved lipid profiles in a patient with dyslipidemia and a complex medical history, suggesting it as a viable alternative to conventional lipid-lowering drugs. While promising, further research and clinical trials are necessary to confirm its efficacy and safety.

## Declaration of patient consent

Written informed consent was obtained from this patient after a full explanation of this study. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Declaration of Helsinki, 1964, and later revision. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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