



**PLANT BASED ADVANCED HEART CARE SUPPLEMENT FOR THERAPEUTIC  
MANAGEMENT OF DYSLIPIDEMIA**

**Dr. Shridhar J. Pandya<sup>1</sup>, Dr. Chetan H. Savliya<sup>2</sup>, Dr. Megha M. Lokhande<sup>3\*</sup> and Dr. Dheeraj H. Nagore<sup>4</sup>**

<sup>1</sup>Director, Gplife Healthcare Pvt. Ltd, 705-706, Orbit-1 Building, Punagum-Saroli Road, Near RRTM Market, Surat, 395010, India.

<sup>2</sup>Director, Gplife Healthcare Pvt. Ltd, 705-706, Orbit-1 Building, Punagum-Saroli Road, Near RRTM Market, Surat, 395010, India.

<sup>3</sup>Assistant Manager Medical Affairs, Gplife Healthcare Pvt. Ltd, 705-706, Orbit-1 Building, Punagum-Saroli Road, Near RRTM Market, Surat, 395010, India.

<sup>4</sup>Director at Mprex Healthcare Pvt. Ltd. Office Number 501, 514 Crossroads, Bhumkar Square, Wakad, Pune.



**\*Corresponding Author: Dr. Megha M. Lokhande**

Assistant Manager Medical Affairs, Gplife Healthcare Pvt. Ltd, 705-706, Orbit-1 Building, Punagum-Saroli Road, Near RRTM Market, Surat, 395010, India.

Article Received on 02/08/2024

Article Revised on 22/08/2024

Article Accepted on 12/09/2024

**ABSTRACT**

A cardiovascular disease (CVD) is a group of disorders affecting the heart and blood vessels due to dyslipidemia. Clinically, high LDL, high TG and low HDL are associated with an increased risk of CVD particularly atherosclerotic CVD. The statins and non- statins are use as conventional treatment for dyslipidemia. Patients with multiple co-morbidities are more likely to experience adverse reactions to long-term statin therapy. Patients who are intolerant to statins and cannot take other medications to treat dyslipidemia, or prefer alternative treatment options. By assessing the need for strong alternatives in the management of cardiovascular diseases Gplife Healthcare Pvt. Ltd. has developed plant based Advanced Heart Care product. After a 60-day treatment period, the synergistic action of product ingredients demonstrated substantial reductions in total cholesterol levels by 49.57%, LDL levels by 54.90%, triglycerides by 48.46%, and VLDL levels by 47.40%, along with a significant increase in HDL levels by 27.59%. The plant based advance heart care product be further utilized, either as a monotherapy or as an adjunctive therapy, for effectively regulating cholesterol levels and thereby managing cardiovascular conditions.

**KEYWORDS:** Dyslipidemia, Cardiovascular, Cholesterol, Plant Based, Arjuna, Cinnamon.

**INTRODUCTION**

A cardiovascular disease (CVD) is a group of disorders affecting the heart and blood vessels due to dyslipidemia.<sup>[1]</sup> It is estimated that 17.9 million people died from CVDs in 2019, accounting for 32% of all deaths worldwide. The majority of these deaths were caused by heart attacks and strokes. There were 17 million premature deaths (under the age of 70) in 2019 caused by noncommunicable diseases, of which 38% were CVDs.<sup>[2]</sup> In addition, the unhealthy diets, physical inactivity, smoking, hypertension, diabetes, obesity, stress, and alcohol consumption are several risk factors contribute to the rise of heart disease.<sup>[3]</sup>

Dyslipidemia is one of the principal risk factors for cardiovascular disease. Cholesterol plays an important role in many healthy cellular functions, but when it reaches high levels in the blood, it can also be harmful to the body. Dyslipidemia is characterized by elevated serum total cholesterol (TC) >200 mg/dL, low-density

lipoprotein cholesterol (LDL-C) >130 mg/dL, or triglycerides (TG) >150 mg/dL and low serum high-density lipoprotein cholesterol (HDL-C) <40 mg/dL concentrations.<sup>[3,4]</sup> In particular, LDL particles are thought to be a major carrier of cholesterol, whereas HDL particles take excess cholesterol and enhance its excretion via the liver. Clinically, these two lipoproteins are significant because high LDL and low HDL are associated with an increased risk of atherosclerosis. Despite the fact that high serum TG levels are associated with CVD, particularly atherosclerotic CVD. By limiting saturated fat, cholesterol, trans fatty acids, and total fat, as well as increasing fiber intake, soy foods, and physical activity, it is possible to reduce cholesterol and triglycerides concentrations.<sup>[4,5]</sup>

Conventional pharmacological treatment for dyslipidemia involves the use of statins and non-statin medications. There adverse reactions, such as myalgia, liver damage, and diabetes, especially when they are

taken in large doses. Similarly, myopathy, liver enzyme elevations, and cholelithiasis are side effects observed as a result of dyslipidemia treatment. Some patients also experience unsatisfactory therapeutic effects and drug resistance. In contrast, patients with multiple comorbidities are more likely to experience adverse reactions to long-term statin therapy.<sup>[6]</sup> Combining a low-density lipoprotein diet with scientifically proven natural plant origin products can significantly reduce LDL and improves HDL levels.<sup>[7]</sup>

Alternatively, natural products, especially of plant origin represent the primary source of potential drug candidate and are particularly identified for patients who are intolerant to statins and cannot take other medications to treat dyslipidemia, or prefer alternative treatment options.<sup>[7,8]</sup> Developing new natural plant-based products for cardiovascular disease holds great promise, as there are lesser side effects associated with plant-based preparations, and they are easy to obtain and can be inexpensive. It is evident that the development of additional and alternative treatments is extremely important for dyslipidemia treatment. By assessing the need for strong alternatives in the management of cardiovascular diseases Gplife Healthcare Pvt. Ltd. has developed Advanced Heart Care products, which have been comprised of Arjuna, Guggul, Cinnamon, Flaxseed, Drumstick, Sea buckthorn, Curcumin, Black pepper etc. herbal ingredients. We have used all standardized and potential extracts to develop Advanced Heart Care products. A proprietary technology called "Synergistic Optimized Blend Technology" is used to develop and manufacture our plant based Advanced Heart Care product. An attempt has been made in this clinical case study comprising 30 different cases to demonstrate the efficacy of the plant based product in the management of dyslipidemia and cardiovascular diseases.

#### CASE PRESENTATION AND METHODOLOGY

A case study was conducted to evaluate the effectiveness of Gplife Healthcare's plant based Advanced Heart Care product in patients with dyslipidemia. The study included 30 cases treated with the product for a duration of 60 days. Only cases with complete adherence to the

treatment regimen were considered for analysis. The sample comprised 20 male and 10 female participants.

Prior to treatment initiation, all participants were diagnosed with dyslipidemia. The study evaluated multiple parameters to assess the product's efficacy, including reduction in total cholesterol, LDL, TG, VLDL, and improvement in HDL levels. Additionally, the product's protective effects on cardiovascular diseases were assessed. Throughout the evaluation period, doses of other cardiovascular medications were monitored. The study also tracked adverse events and compliance with the Advanced Heart Care treatment.

#### Treatment

The treatment protocol involved administering 2 tablets of the Advanced Heart Care product twice daily to all subjects participating in the case studies. This dosage regimen was consistently followed throughout the duration of the study period.

#### Statistical Analysis

Statistical analysis was conducted according to intention-to-treat principles. Changes in total cholesterol, LDL, TG, and HDL parameters from baseline to day 60 were analyzed using Student's t-test. Changes in VLDL parameters from baseline to day 60 were analyzed using the Wilcoxon signed-rank test. Values are expressed as mean  $\pm$  SD. A p-value  $< 0.05$  was considered statistically significant. All statistical analyses were performed using SPSS software.

### RESULTS

#### Demographic characteristics

The effect of the Advanced Heart Care product on various laboratory parameters in patients with dyslipidemia was evaluated. A total of 30 cases were evaluated who have taken treatment of Advanced Heart Care product of Gplife Healthcare for 60 days. Only those case are considered who has not missed the doses in the treatment duration. Out of 30 cases, 20 were male and 10 were females. The average age of 30 cases was found to be  $48.5 \pm 11.12$  years for males and  $42.5 \pm 12.51$  years for females [Table 1]

**Table 1: Assessment of demographic characteristics.**

Parameter	Treatment	
	Male (n=20)	Female(n=10)
Age (years)	$48.5 \pm 11.12$	$42.5 \pm 12.51$
Average age (years)	$46.2 \pm 11.69$	

#### Assessment of change in total cholesterol level

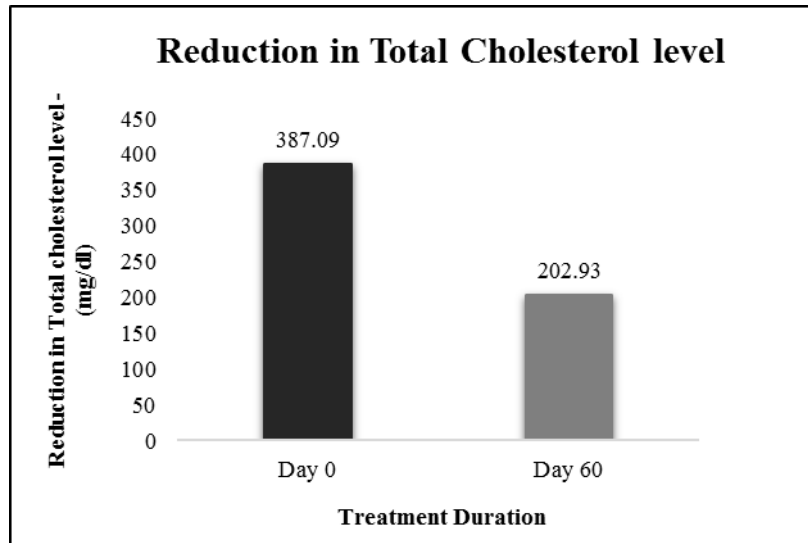
Total cholesterol was evaluated in 30 cases who were treated with Advanced Heart Care products for a period of 60 days. The initial mean total cholesterol significantly reduced from  $387.0 \pm 138.46$  to  $202.93 \pm 73.78$  after 60 days. In inference to the evaluation of the above parameter after 60 days, it has

been found that the total cholesterol levels were reduced by 47.57% after 60 days [Table 2, Figure 1].

**Table 2: Assessment of change in total cholesterol level.**

Duration	Total Cholesterol Levels (mg/dl) (Mean±SD)	% Reduction	P value
Baseline	387.09±138.46	-	-
Day 60	202.93±73.78	47.57%	<0 .001

Data analysed by student *t*-test. Significant at  $p < 0.05$

**Figure 1: Reduction in total cholesterol level.**

#### Assessment of change in low density lipoprotein (LDL) level

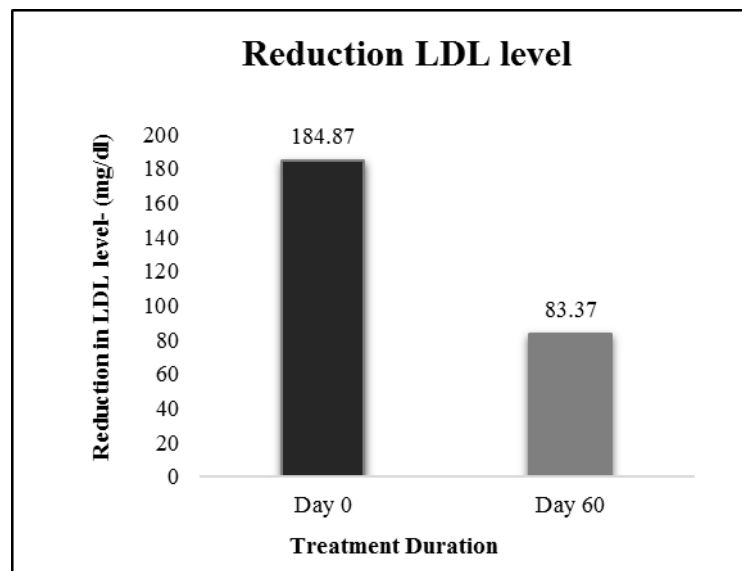
LDL was evaluated in 30 cases who were treated with Advanced Heart Care products for a period of 60 days. The initial mean LDL significantly reduced from

184.87±55.59 to 83.37± 25.56 after 60 days. In inference to the evaluation of the above parameter after 60 days, it has been found that the LDL levels were reduced by 54.90% after 60 days [Table 3, Figure 2].

**Table 3: Assessment of change in low density lipoprotein (LDL) level.**

Duration	LDL Levels (mg/dl) (Mean±SD)	% Reduction	P value
Baseline	184.87±55.59	-	-
Day 60	83.37± 25.56	54.90%	<0 .001

Data analysed by student *t*-test. Significant at  $p < 0.05$

**Figure 2: Reduction in LDL level.**

**Assessment of change in triglyceride level**

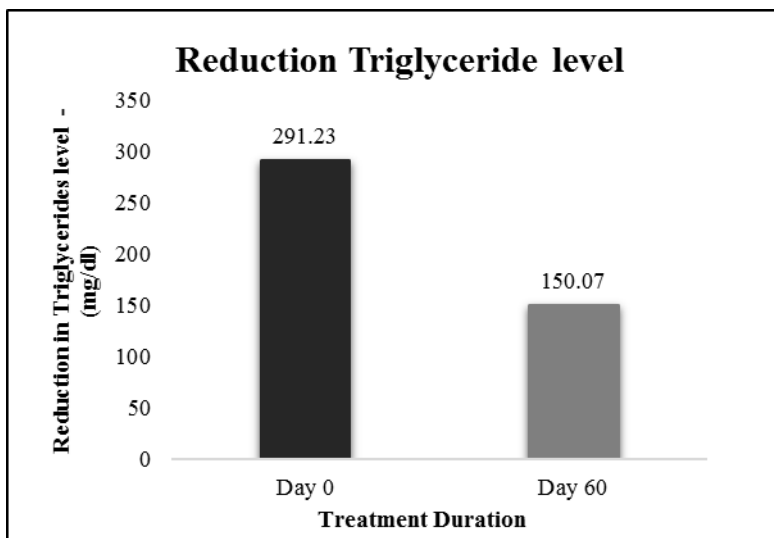
Triglyceride was evaluated in 30 cases who were treated with Advanced Heart Care products for a period of 60 days. The initial mean triglyceride significantly reduced from  $291.23 \pm 111.31$  to  $150.07 \pm 56.28$  after 60 days. In

inference to the evaluation of the above parameter after 60 days, it has been found that the triglyceride levels were reduced by 48.46% after 60 days [Table 4, Figure 3].

**Table 4: Assessment of change in triglyceride level.**

Duration	Triglyceride Levels (mg/dl) (Mean±SD)	% Reduction	P value
Baseline	291.23±111.31	-	
Day 60	150.07±56.28	48.46%	<0 .001

Data analysed by Student t-test. Significant at  $p < 0.05$

**Figure 3: Reduction in triglyceride level.****Assessment of change in high density lipoprotein (HDL) level**

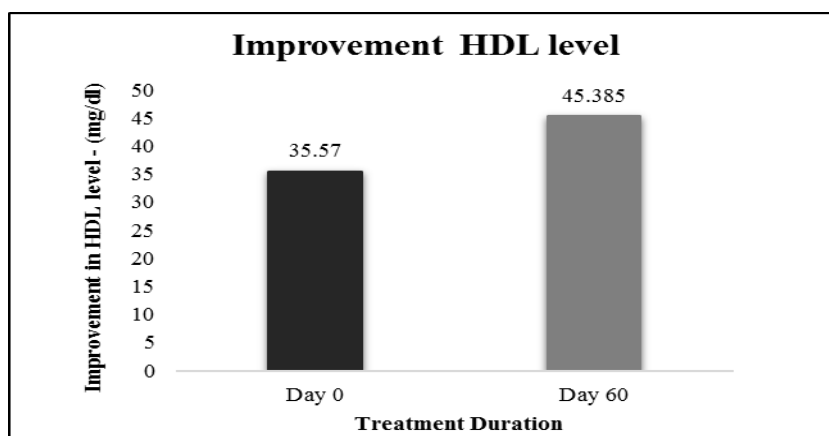
The study evaluated changes in HDL levels over a 60-day period. At baseline, the mean HDL level was  $35.57 \pm 8.075$  mg/dl. By day 60, the mean HDL level increased

to  $45.38 \pm 8.482$  mg/dl, representing a significant improvement of 27.59% ( $p < 0.001$ ). The substantial increase in HDL levels over the study period suggests a potentially beneficial effect of the treatment on cardiovascular health markers [Table 5, Figure 4].

**Table 5: Assessment of change in high density lipoprotein (HDL) level.**

Duration	HDL Levels (mg/dl) (Mean±SD)	% Improvement	P value
Baseline	35.57±8.075	-	-
Day 60	45.38±8.482	27.59%	<0 .001

Data analysed by student t-test. Significant at  $p < 0.05$

**Figure 4: Improvement in HDL level.**

### Assessment of change in Very-low-density lipoprotein (VLDL) level

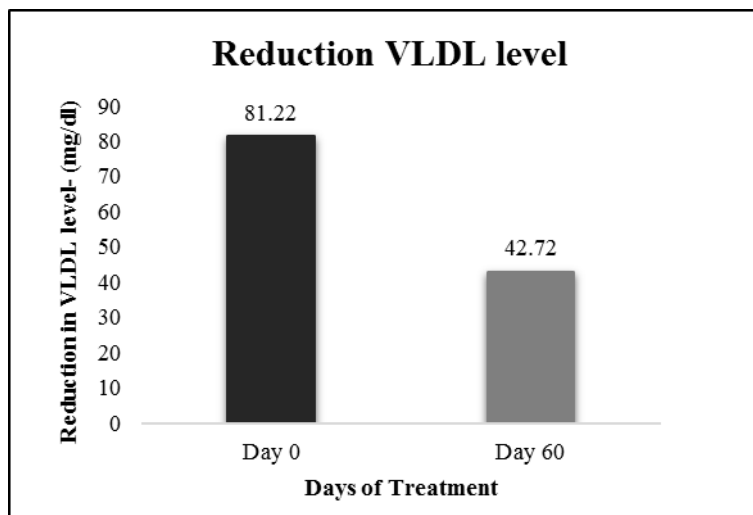
The study assessed changes in VLDL levels over a 60-day period. At baseline, the mean VLDL level was 81.22  $\pm$  58.52 mg/dl. By day 60, this had decreased to 42.72  $\pm$

12.62 mg/dl, representing a substantial reduction of 47.40%. This change was statistically significant ( $p < 0.001$ ). The marked decrease in VLDL levels suggests a notable improvement in this lipid parameter over the course of the study [Table 6, Figure 5].

**Table 6: Assessment of change in Very-low-density lipoprotein (VLDL) level.**

Duration	VLDL Levels (mg/dl) (Mean $\pm$ SD)	% Reduction	P value
Baseline	81.22 $\pm$ 58.52	-	
Day 60	42.72 $\pm$ 12.62	47.40%	<0 .001

Data analysed by Wilcoxon signed rank test. Significant at  $p < 0.05$



**Figure 5: Reduction in VLDL level.**

### DISCUSSION

The present case study demonstrates how the consumption of plant based Advanced Heart Care product and strict adherence to treatment can effectively regulate cholesterol levels and manage various cardiovascular diseases. Over the past few years, herbal extracts derived from plants have been used to treat and prevent a variety of diseases. Based on our study, patients consuming the Advanced Heart Care product experienced significant reductions in LDL, triglycerides, total cholesterol, and VLDL, as well as a significant improvement in HDL. These findings align with earlier research studies, which have shown that medicinal and edible plants, including their extracts and bioactive compounds, have the potential to regulate serum TG, TC, LDL, and HDL concentrations to manage dyslipidemia.<sup>[8]</sup>

A prospective cohort study found arjuna powder followed by Arogyavardhini Vati significantly decreased total cholesterol, LDL, triglycerides, serum C-reactive protein, and blood glucose, while increasing HDL in dyslipidemia patients.<sup>[9]</sup> Another study showed combining arjuna bark powder with statins for 3 months reduced total cholesterol, triglycerides, and LDL.<sup>[10]</sup> Guggul has been used in plant based medicine for centuries to treat various ailments, including cardiovascular disorders. A review article concluded that guggulsterones, the active compounds in guggul, can

lower cholesterol levels by increasing the uptake of LDL cholesterol in the liver.<sup>[11]</sup>

Clinical studies reveal cinnamon's potential in managing dyslipidemia and cardiovascular diseases. Vafa et al. found that cinnamon consumption reduced total cholesterol, LDL-C, and triglycerides in type 2 diabetes patients.<sup>[12]</sup> Khan et al. reported similar improvements after a 40-day supplementation period.<sup>[13]</sup> A meta-analysis by Maieran et al., combining data from ten RCTs, showed consistent decreases in total cholesterol and triglycerides with cinnamon supplementation. These findings suggest cinnamon's promising role in lipid modulation and cardiovascular health management.<sup>[14]</sup> Cunnane et al. reported significant reductions in cholesterol (9%) and LDL-C (18%) in healthy females consuming 50g of flaxseeds daily for 4 weeks, without affecting HDL-C levels.<sup>[15]</sup> In a separate study, Jenkins et al. conducted a randomized crossover trial using partially defatted flaxseeds for 3 weeks, observing modest decreases in total cholesterol (5%) and LDL (8%).<sup>[16]</sup>

This study highlights the potential of the plant based Advanced Heart Care product as an alternative safe medication for the treatment of dyslipidemia and cardiovascular diseases. The synergistic action of ingredients and technology results in beneficial effects in regulating cholesterol levels. It can be concluded that the Advanced Heart Care product alone can be effectively

used in the treatment of cardiovascular diseases. Future studies involving a larger and diverse population could be instrumental in establishing the Advanced Heart Care products as effective adjuvants or potential substitutes for standard treatments in managing a wide range of cardiovascular diseases.

### CONCLUSION

Gplife Healthcare's Advanced Heart Care product has exhibited highly promising results in improving cholesterol parameters, including total cholesterol, triglyceride, LDL, HDL, and VLDL, in patients with cardiovascular diseases. After a 60-day treatment period, the product demonstrated substantial reductions in total cholesterol levels by 49.57%, LDL levels by 54.90%, triglycerides by 48.46%, and VLDL levels by 47.40%, along with a significant increase in HDL levels by 27.59%. Based on these compelling findings, it can be confidently concluded that the synergistic action of product ingredients exerts a beneficial effect on cholesterol regulation, making it a valuable option for managing cardiovascular diseases. Therefore, it is strongly recommended that the plant based Advanced Heart Care product be further utilized extensively, either as a monotherapy or as an adjunctive therapy, for effectively regulating cholesterol levels and thereby managing cardiovascular conditions.

### ACKNOWLEDGMENT

The authors would like to acknowledge the research team and the back-office team involved in the research work. We would like to acknowledge the support provided by back office, Gplife Healthcare Pvt. Ltd.

### CONFLICTS OF INTEREST

All authors declare that there is no conflict of interest regarding the publication of this paper.

### REFERENCE

- Olvera Lopez, E., Ballard, B. D., & Jan, A. (2023). Cardiovascular Disease. In StatPearls. StatPearls Publishing.
- Di Cesare M, Perel P, Taylor S, et.al. The Heart of the World. *Global Heart*, 2024; 19(1): 11.
- Tabatabaei-Malazy, Ozra et al. "Prevalence of dyslipidemia in iran: a systematic review and meta-analysis study." *International journal of preventive medicine*, 2014; 5(4): 373-93.
- Huff T, Boyd B, Jialal I. Physiology, Cholesterol. [Updated 2023 Mar 6]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470561/>
- Stein, R., Ferrari, F. & Scolari, F. Genetics, Dyslipidemia, and Cardiovascular Disease: New Insights. *Curr Cardiol Rep*, 2019; 21: 68.
- Ramkumar S, Raghunath A, Raghunath S. Statin Therapy: Review of Safety and Potential Side Effects. *Acta Cardiol Sin*, 2016 Nov; 32(6): 631-639.
- Trautwein EA, McKay S. The Role of Specific Components of a Plant-Based Diet in Management of Dyslipidemia and the Impact on Cardiovascular Risk. *Nutrients*, 2020 Sep 1; 12(9): 2671.
- Hu Y, Chen X, Hu M, Zhang D, Yuan S, Li P, Feng L. Medicinal and edible plants in the treatment of dyslipidemia: advances and prospects. *Chin Med*, 2022 Sep 29; 17(1): 113.
- Kumar G, Srivastava A, Sharma SK, Gupta YK. Safety and efficacy evaluation of Ayurvedic treatment (Arjuna powder and ArogyavardhiniVati) in dyslipidemia patients: A pilot prospective cohort clinical study. *Ayu*, 2012; 33: 197-201.
- Khalil S. Effect of statin versus Terminalia arjuna on acute myocardial infarction. DNB thesis(Medicine), 2005 National Board of Examination, New Delhi, India.
- Sarup P, Bala S, Kamboj S. Pharmacology and Phytochemistry of Oleo-Gum Resin of Commiphora wightii (Guggulu). *Scientifica (Cairo)*, 2015; 2015: 138039. Epub 2015 Oct 26.
- Vafa M, Mohammadi F, Shidfar F, Sormaghi MS, Heidari I, Golestan B, Amiri F. Effects of cinnamon consumption on glycemic status, lipid profile and body composition in type 2 diabetic patients. *Int J Prev Med*, 2012; 3: 531–536.
- Khan A, Safdar M, Ali Khan MM, Khattak KN, Anderson RA. Cinnamon improves glucose and lipids of people with type 2 diabetes. *Diabetes Care*, 2003; 26: 3215–3218.
- Maiorean SM, Serban MC, Sahebkar A, et al. Lipid and Blood Pressure Meta-Analysis Collaboration (LBPMC) Group. The effects of cinnamon supplementation on blood lipid concentrations: a systematic review and meta-analysis. *J Clin Lipidol*, 2017; 11: 1393–1406.
- Cunnane SC, Ganguli S, Menard C, et al. High alpha-linolenic acid flaxseed (*Linum usitatissimum*): some nutritional properties in humans. *Br J Nutr*, 1993; 69(02): 443–453
- Jenkins DJ, Kendall CW, Vidgen E, et al. Health aspects of partially defatted flaxseed, including effects on serum lipids, oxidative measures, and ex vivo androgen and progestin activity: a controlled crossover trial. *Am J Clin Nutr*, 1999; 69(03): 395–402.