A comparative clinical study of the Unani compound medical preparation for Antilipidaemic activity with special reference to the modern drug Atorvastatin.

Dr.M.A.A.Sirajudeen[1], Dr. B.M.Nageeb[1], Dr.R.P.Illeperuma[2], Dr. (Mrs) I.H.Thajudeen[3],

1. IIM, University of Colombo, 2.Faculty of Allied Health Science, University of Peradeniya. 3.Asroff Memorial Hospital, Kalmunai.

ABSTRACT

Background: Dyslipidaemia is a metabolic disorder. It is aa common problem iproblem in the global community today. It leads to Atherosclerosis, hypertension, ischaemic heart diseases and strokes. Hence this is a life threatening condition. Coronary Heart Disease (CHD) is the leading cause of morbidity and mortality in the United States, accounting for approximately 500,000 deaths per year and associated annual morbidity cost of more than $200 billion. In the past three-decades, numerous clinical and epidemiological studies have shown repeatedly that an elevated blood cholesterol level is one of the major modifiable risk factors associated with the development of CHD. In particular, these studies have demonstrated that low-density lipoprotein (LDL) cholesterol is the primary lipoprotein mediating atherosclerosis. Framingham Heart Study, population studies from Norway and Australia documented that hypertension was associated with increased levels of total cholesterol and a decreased levels of HDL cholesterol. It has been proved in U.S.A that if blood cholesterol is decreased to 25%; 49 % of heart disease will be reduced. This situation has increased gradually in Sri-Lanka has shown the reports of bulletin of medical research institute of Sri Lanka Volume - III 1987 and Volume -V in 1988/1989. Coronary heart disease resulting from progressive atherosclerosis remains the most common cause of morbidity and mortality all over the world (Yusuf et al. 2001). In developing countries, the incidence of cardiovascular disease is increasing alarmingly. India is on the verge of cardiovascular epidemics (Grover et al. 2003; Okrainec et al. 2004). The circulatory system disorders are going to be the greatest killer in India by the end of year 2015 (Kaul et al. 1998).

Statement of the problem: A large number of allopathic hypolipidaemic drugs are currently available in the market such atorvastatin, simvastatin, cholestyramine, clofibrate, gemfibrozil, nicotinic acid, probucol etc. but they are costly and have many serious side effects; hepatotoxicity, gastro intestinal disturbance, dyspepsia, impotence and headache. These lag behind the desired properties such as efficacy and safety on long term use, cost and simplicity of administration. These factors do not fulfill conditions for patient's compliance. Plants and herbs are mines of large number of bioactive photochemical that might serve as lead for the development of effective, safe, cheap novel drugs. A number of medicinal plants have shown their beneficial effect on the cardiovascular disease (CVD) by virtue of their lipid lowering, antianginal, antioxidant and cardio protective effects (Wang & Ng 1999; Dwivedi 2004). Zarambad (*Curcuma zedoria*), Kariyapak (*Muraya koinigii*)), Lahsan (*Allium Sativum*) well-known medicines are also reported to be carminative, appetizer, brain tonic, antispasmodic, deobstruant. The latest researches have revealed their anti hyperlipidaemic activity and also shown their anti oxidant and anti coagulant properties (CCRUM, Aligar 1992). Because of the above-mentioned properties of above drugs along with their weight reducing property, we selected the combination of these drugs for the clinical study.

The mMain objectives of this research ~~is~~ are to evaluate the lipid lowering efficacy of the Unani compound medical preparation in hyperlipidaemic patients and to compare its lipid lowering~~hypolipidaemic~~ effect~~s~~ with a modern drug Atorvastatin.

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Data source and Research Methodology: The present study was carried out on 120 individuals of both male and female of hyperlipidaemic patients divided into ~~with~~ two groups (each group 60 patients), during the period extending from the years 2014-2015. The trial was performed according to the approach Ethical Guidelines of the Institute of Indigenous Medicine (IIM), University of Colombo. **Criteria for selection of patients:** Inclusion criteria subjects of dyslipidaemia with serum cholesterol above 200mg/dl. Age group: 30 - 60 years, Sex: Both Male and Female. Patients who were voluntarily consented were included in the study and Patients who would give the written consent to be enrolled in this research after clear explanation about the procedure of research. **Exclusion criteria**: Subjects of cardiac, renal, thyroid disorders, diabetes mellitus (Type-1), malignant hypertension and other complicating diseases; **Guidelines for diet:** Guidelines were given in order to standardize the regular meals to all patients. Patient fulfilling the inclusion criteria were randomized into two groups, group-A and group-B. The Group-A-60 cases with Unani compound test drug consist of Zarambad (*Curcuma zedoria*), Lahzan (*Allium sattivum*), Kariyapak (*Murraya koenigii*), in the ratio of 2:2:2 respectively, powdered form dose: 5 g. Morning and Evening (BD) after meals at Ayurvedic Teaching Hospital, Borella, Colombo. Group-B 60 cases with allopathic drug Atorvastatin, dose: 10 mg. Tablet daily in the night orally after meals at Base Hospital, Akkaraipattu. **Duration of the treatment:** 3 Months. All the cases were assessed at the interval of 45 days, i.e. 0, 45, 90 days. The patients were assessed clinically for efficacy and safety parameters at each follow up (45 days) and were investigated before, during and after the treatment for haematological and biochemical parameters. **Diagnostic criteria:** By specially prepared Performa, By Investigation - Lipid profile test (The samples were obtained in an overnight fasting 12 -14 hours). The selected patients for lipid profile tests were sent to Golden Key Hospital, Rajagiriya (Group A) and Medi Diagnostic Service, Akkaraipattu (group B) **Assessment criteria:** Following assessments were done before treatment, during treatment, after treatment. History, Diet habits (vegetarian or non vegetarian), Symptoms and Signs, Lipid profile (Total cholesterol, Triglycerides, HDL-High Density Lipoprotein, LDL-Low Density Lipoprotein and VLDL- Very Low Density Lipoprotein), Height and weight of the patients (to calculate body mass index-BMI), The vital signs including pulse rate, blood pressure (systolic and diastolic), temperature were noted.

Observation and Results: Group 'B' (Atorvastatin group) • Effect of drug on serum total cholesterol: At the baseline the mean serum cholesterol level in the Atorvastatin group was 251.23 ± 7.25 mg/dl. During the treatment was reduced to 210 ± 7.79mg/dl. After treatment, it got further reduced to 175.78 ± 5.88 mg/dl. The total mean reduction was **75.45 mg/dl. • Effect of drug on serum Triglycerides:** The mean triglyceride before treatment was 211.23 ± 13.50 mg/dl. During the treatment, it was 165.50 ± 11.02 mg/dl. After treatment level was 165.71 ± 12.07 mg/dl. Total mean reduction of triglyceride level was **45.52 mg/dl. • Effect of drug on serum HDL:** The mean HDL level before treatment was 43.87 ± 1.46 mg/dl. During the treatment, it was 40.75 ± 1.69 mg/dl. After treatment mean was 39.06 ± 0.94 mg/dl. Total mean decreased by HDL level was **4.81mg/dl. • Effect of drug on serum LDL:** The mean LDL level before treatment was 164.69 ± 7.79 mg/dl. During the

treatment, it was 133.48 ± 8.13 mg/dl. After treatment LDL level reduced to 102.89 ± 5.10 mg/dl. The total mean reduction was **61.8 mg/dl. • Effect of drug on serum VLDL:** The mean VLDL level before treatment was 42.05 ± 2.72 mg/dl. During the treatment, it was 35.25 ± 2.62 mg/dl. After treatments mean VLDL level was 33.08 ± 2.41 mg/dl. The total mean reduction was **8.9 mg/dl.** From the above partial data (30 patients) it is quite evident that the drug Atorvastatin has effect on biochemical / lipid parameters like Serum Total cholesterol, HDL, LDL. The significant activity of the Atorvastatin drug in decreasing serum cholesterol, LDL and HDL (but not raising HDL) supports the hypolipidaemic activity of Atorvastatin.

Conclusion: According to the results of our study it seems that Atorvastatin may have some beneficial therapeutic effects in the treatment of hyperlipidaemia. However, after end of this comparative clinical research we will reach the final conclusion. **Statistical analysis:** The data were tabulated and statistically analyzed by calculating the mean value for the observations recorded before, during and after the treatment. ~~Statistical analysis will be done~~Data were ~~by~~analyses by using an appropriate statistical method SPSS 16.0 for windows~~ology~~. Differences~~s~~ will be considered to be statistically significant at P<0.05 level.

~~This Unani compound medical preparation will be highly accepted by the community because of considering its easy availability, cost effectiveness and other beneficial effec~~**Key Words**: Dyslipidaemia, ~~clinical study, h~~Hyperlipidaemia, Hyperlipoproteinaemia, Lipid profile and Atorvastatin.

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