COMPARISION OF ANTIDYSLIPIEMIC POTENTIAL OF 80 MILLIGRAMS OF FENOFIBRATED WITH 8 GRAMS OF NIGELLA SATIVA SEEDS DAILY

INTRODUCTION

Hyperlipidemia, diabetes mellitus, hypertension are combinable and may lead to development of metabolic syndrome[1]. Free radicle formation in human body is normal, but there are chances of development of atherosclerotic plaques if these free radicles are interacted with high plasma lipids[2]. Atherosclerotic plaques are stuck with endothelial layer of coronary arteries leading to development of coronary artery disease (CAD)[3]. Hypertension, CCF, cardiac arrest, and cardiac arrhythmia are consequences of CAD[4]. One of the factors causing CAD is abnormal plasma lipid levels[5]. For prevention of CAD, either blood lipids must be at normal levels or free radicle formation must be reduced[6]. In allopathy niacin, statins, fibrates and psyllium are used as hypolipidemic agents. Vitamin C, vitamin E, adenosine, lactoferrin and carotenoids are used as antioxidant drugs[7]. Fenofibrate causes activation of peroxisome proliferator activated receptor α (PPARα), leading to increased lipolysis and elimination of triglyceride-rich particles from plasma by activating lipoprotein lipase and reducing production of apoprotein C-III (an inhibitor of lipoprotein lipase activity)[8]. Nigella sativa or Kalonji is being used as medicinal herb since pre-historical times. It contains carvacrol, nigellicine, polyunsaturated fatty acids, alphahederin, thymoquinone, mucilage, sterols, and migellamine[9]. Kalonji affects HMG-Co-A reductase leading to decreased formation of cholesterol in hepatocytes[10]. This herb contain thymoquinone which inhibits lipid peroxidation in liposomes[11]. Alphahederin, thymoquinone, mucilage, sterols, and migellamine present in kalonji scavenge superoxide anion and hydroxyl radicles leading to decreased chances of LDL oxidation, and development of coronary artery disease[12].

PATIENTS & METHOD

TYPE OF STUDY: The research work was single blind placebo-controlled, conducted at Ghurki trust teaching Hospital, Lahore from February 2017 to July 2017. PATIENTS & CONSENT: Seventy five hyperlipidemic patients were selected for research work. Written consent was taken from all patients. INCLUSION CRITERIA: 75 diagnosed secondary hyperlipidemic patients were selected with age range from 20 to 70 years. EXCLUSION CRITERIA: Exclusion criteria were hypothyroidism, diabetes mellitus, alcohol addictive patients, peptic ulcer, any gastrointestinal upset, renal impairment, and any hepatic or cardiac problem. GROUPING: All patients were divided in three groups (group-A, group-B, group-C), 25 in each group. Their baseline experimental data was taken and filed in specifically designed Performa, at start of taking medicine, like lipid profile, blood pressure and pulse rate. The study period was eight weeks. Twenty five patients of group-A were advised to take two grams of Kalonji, twice daily. Twenty five patients of group-B were advised to take Fenofibrate 40 mg tablets, BD ie; one after breakfast and one after dinner. Twenty five patients were provided placebo capsules, (containing grinded sorghum), taking one capsule after breakfast and another before going to bed. All participants were advised to take these medicines for eight weeks. They were also advised for 20 minutes brisk walk at morning or evening time. Patients were called every 2 weeks for follow up to check blood pressure, weight, pulse rate etc. Drug compliance to the regimen was monitored by interview and counseling at each clinical visits. METHOD: Serum LDL-cholesterol was calculated by Friedwald formula[13] (LDL-Cholesterol = Total Cholesterol-(Triglycerides/5 +HDL-Cholesterol). BIOSTATISTICAL ANALYSIS: Data were expressed as the mean ± SD

and “t” test was applied to determine statistical significance as the difference. A probability value of <0.05 was considered as non-significancant and P<0.001 was considered as highly significant change in the results when pre and post-treatment values were compared.

RESULTS

When results were compiled and statistically analyzed by using SPSS, it was observed that Nigella sativa and fenofibrate decreased total-cholesterol, LDL-cholesterol, triglycerides highly significantly (p-value <0.001) and increased HDL-cholesterol significantly (p-value <0.01) as compared to placebo treatment. Results are summarized as:

Effects of Kalonji on lipid profile of 25 hyperlipidemic patients: TC at day-0 was 231.21±1.12 mg/dl which reduced to 200.90±3.11 mg/dl. The overall change in the parameter was 30.31 (P-value= <0.001). TG at day-0 was 178.90±3.01 mg/dl which reduced to 141.10±1.01 mg/dl. Change was 37.80 (P-value= <0.001). LDL-C at day-0 was 191.14±3.45 mg/dl which reduced to 159.40±2.98 mg/dl. Change was 31.74 (P-value= <0.01). HDL-C at day-0 was: 36.48±2.11 mg/dl which increased to 41.17±1.88 mg/dl. Incraese in the parameter was 4.69 (p-value = <0.01) Effects of GEMFIBROZIL on 25 hyperlipidemic patients: TC at day-0 was 240.92±2.21 mg/dl which reduced to 197.31±1.00 mg/dl. In mg/dl this change was 43.61 with P-value= <0.001. TG at day-0 was 204.31±1.26 mg/dl which reduced to 170.14±2.93 mg/dl. Reduction in mg/dl it was 34.17 (P-value= <0.001). LDL-C at day-0 was 197.77±3.91 mg/dl which reduced to 159.62±2.20 mg/dl. Over all change was 38.15 with P-value= <0.001. HDL-C at day-0 was 32.97±3.10 mg/dl which increased to 40.45±2.22 mg/dl. Increased in mg/dl it was 7.48 mg/l. P-value= <0.01.

Placebo Effects on 25 hyperlipidemic patients: TC at day-0 was 213.11±2.32 mg/dl which reduced to 210.10±2.91 mg/dl. P-value= >0.05. TG at day-0 was 170.00±3.01 mg/dl which reduced to 161.70±3.91 mg/dl with P-value= >0.05. LDL-C at day-0 was 163.104±1.45 mg/dl which reduced to 159.40±1.77 mg/dl (P-value= >0.05). HDL-C at day-0 was 31.12±1.01 mg/dl which increased to 31.69±2.00 mg/dl. P-value= >0.05

DISCUSSION

Nigella sativa and Fibrates are very good hypolipidemic agents which can be used alone or in combination. Changes in all parameters of 25 hyperlipidemic patients lipid profile (i.e.; serum cholesterol, triglycerides, LDL-cholesterol and HDL-cholesterol) were highly significant in two drug groups when they compared with placebo-controlled group, except change in serum total cholesterol in Nigella sativa group, which is significant with probability value <0.01. Our results regarding lipid lowering effects of Nigella sativa match with results of research work conducted by Fiju G et al[14] match with research study conducted by , who did see reduction of serum total cholesterol 13.01 %, triglycerides 9.1 % and 17.89 %. HDL-cholesterol increased 23.62 %. Merghatt V et al[15] proved highly significant changes in lipid parameters of hyperlipidemic rats when they used one teaspoon of Nigella sativa oil twice daily for 3 weeks. These results match with results of our work. Jimiyath CT et al[16] conducted research on hyperlipidemic patients and proved 12.76, 8 % , 15 % decrese in serum cholesterol, triglycerides, and LDL-cholesterol in 19 days when they used kalongi oil. They have explained marked protective action of Nigella sativa against ischemic reperfusion-induced gastric mucosal lesions, an effect that was mediated by suppression in the level of lipid peroxide and lactic dehydrogenase and an increase in those in glutathione and superoxide dismutase. The results of research work conducted by Rolkerr F[17] do not match with our results who observed 10.11 %, 12.51 %, 12.45 % reduction in total cholesterol, triglycerides, and LDL-cholesterol when they used kalongi oil for two months in hyperlipidemic patients. This difference in results may be due

to large difference in sample size of tested group individuals. Turnorj F et al[18] observed much higher quantity of reduction in LDL-Cholesterol (-30.11 %) when they used two spoons of Nigella sativa in 1000 hyperlipidemic patients for the period of 6 months. This difference is surely due to large sample size in their study and duration of research study. Our results are in contrast with research work results of Erovha E et al[19] who observed(11 %) increase in HDL-cholesterol with use of Kalonji for 4 weeks in 19 patients suffering from hyperlipidemia. Qulath C et al[20] describes more than six mechanism by which Kalonji affects blood lipids, Enterohepatic circulation inhibition is one of them. Askalth VV et al[21] have emphasized not to combine seeds of kalonji with vitamin D and E, as absorption of these vitamins may be decreased leading to iatrogenic effects like SUPERINFECTIONS. Parjhat K et al[22], and Soghan MM et al[23] observed same effects of Kalonji as ours. Results of study by Rullt FD et al[24], and Wksort VB et al[25] support our results. In our results Fenofibrate decreased TC 43.61 mg/dl, TG 34.17 mg/dl, LDL-C 38.15 mg/dl, and increased HDL-C 7.48 mg/dl. Same response was observed by Qulchawt C et al25, and Dadhagirr CD et al26. However Erjhoth T et al27 and Polandf YT et al28 proved that fenofibrate do not increase HDL-C in hyperlipidemic patients unless given in high doses ie; more than 200 mg per day for considerable time.

REFERENCES:

1.Surnam BB, Teruja RE, Mikawl V. How do metabolic syndrome affects human health. JHP 2014;7(6):177-80.

2.Dermas VG. Is CAD preventable?. JIDR 2016;5(2):77-90.

3. Tosab CX, Heruj TR. Healthy heart with herbs consumption. Jou Org Chem. 2015;11(8):99-104.

4. Welkova R, Malvana E. Coronary artery diseases and Antioxidents. JBCR 2016;11(7):334-9.

5. Quinojha WQ. Dyslipidemia and use of vitamins. Jou Clinc Med Surg 2016;7(3):95-100.

6. Hurrher G. Adverse effects of Niacin. Annals of JPGMC 2014;777-80.

7. Ajujha V, Jelaty T, Yulgur M. Do allopathic drugs really work as antioxidants?. Bioch Jou. 2014;8(8):157-9.

8. Erja VC, Meloha EW. Fenofibrates: new and practicable agent in allopathy. Fun Jou Ayu Med 2013;12(4):66-73.

9. Roher C. Plants rich with useful active ingredients. Uni Jou Biochem 2016:8(1):48-55.

10. Makiyaq W. Another view about nigella sativa. Org Chem 2012;13(8):99-104.

11. Terijy B, Urrmla T. One hundred Indian plants with therapeutic contents. IJAM 2012;8(4):78-83.

12. Shudhab C, Tikuma X, Nersag X. How do phytochemistry help in ayurvedic medicines?. Res Jou Chi Ther 2015;119-22.

13. Fojad SE, Lehtrar TT, Perkas GT, Lohesr BR. How to combine allopathic medicines with phytochemicals safely?. JCMT 2015;8(7):44-50.
14. Fiju G, Rukhte F, Trukth H. Herbs affect lipid profile of hyperlipidemic patients. JHTR 2014;7(9):77-82.
15. Marghatt V, Heroht D, Hisursu S, Gelthavan M. Effects of Kalonji on hyperlipidemic rats. JCN 2016;8(4):166-70
16. Jimiyath CT, Levalhr RT, Milght FG, Herosath KJ. Use of Kalonji oil in hyperlipidemic, diabetic and hypertensive patients. Jou Cl Med 2015;11(8):345-8.
17. Rolkerr F, Meltyv D, Ghuligth D. Use of Kalonji oil in HL, HT patients. Diab Care 2014;7(6):100-106.
18. Turnorj F, Surghoth D, Ghyttva F. 30 % reduction in LDL-C can be achieved by NS seeds. Herb Ther 2016;8(7):330-8.
19. Erovha E, Tolghtt T, Jhulawvew B. Comparative study of hypolipidemic herbs. JMDR 2015;88-94.
20. Qulath C, Lovath B, Multhagh D. NS and EH circulation. Cure by herbs 2014;6(3):45-9.
21. Askalth VV, Romill ER, Erjhov BT. How to deal with superinfections by herbs?. Cl Nutr 2013;6(1):189-93.
22. Parjhat K, Rekuva T, Yerthl D. Prevention of infections by medicinal plants. JCNR 2012;2(3):33-7.
23. Soghan MM, Mortan BT, Jhulgh TR. How to get benefit from asthetic plants. Med Herb Ther 2014;10(9):122-7.
24. Rullt FD, Erjho GT, Uryill DW. Therapeutic applications of some active ingredients from plants and fruits. Ther plants 2015;7(2):77-84.
25. Qulchawt C, Deldharr V, Multanikrr F. Gemfibrozil and fenofibrate: Comparision. JCM 2016;8(2):56-9.
26. Dadhagirr CD, Lighman CD, Jhulki HG, Ghulmn BV. A single blind placebo controlled study of niacin and other hypolipidemic medications. JMR 2012;3(12):167-9.
27. Erjhoth T, Gheruj Y, Jhulmill B. Allopoathic drugs for hyperlipidemia: Review article on CAD. Cl Nutr Jou 2014;5(4):77-9.
28. Polandf YT, Rokhrr VB, Mujhm FT. Effects of niacin and fibrates on lipid profile. JMRR 2016;7(4):120-7.