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Original Research Article

Cardiologists Do Advise Hyperlipidemic Patients to Maintain or Follow Prophylactic Measures in Scenario of Genetic Susceptibility of Hyperlipidemic Patients

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Abstract: Biotransformation in human body results accumulation of free radicals (reactive oxygen species or ROS). If patients LDL particles are more than normal in systemic circulation, get interacted with free radicals and form foamy cells; initial stage of coronary artery disease (CAD). Hyperlipidemia may be primary (genetic reason) or secondary which is acquired type of dyslipidemia. Free radicle formation in human body is very much normal phenomenon. Just reducing LDL or raising HDL may prevent interaction of LDL with reactive oxygen species (free radicals), escaping patient to develop CAD. Commonly used drugs in prophylaxis or treatment of dyslipidemia include statins (HMGCo-A reductase inhibitors), niacin, bile resins and fibric acids. There are alternative therapies for dyslipidemia including use of fibers, fruits, and vegetables. In Pakistan there are huge number of fruits and herbs which are getting popularity as hypolipidemic agents. One of the important fruit in Pakistan having hypolipidemic potential is JUJUBES (in urdu called Bair). In this study we have compared hypolipidemic effects of Bair with statin in hyperlipidemic patients. This study was conducted at Begum Jan hospital, Islamabad-Pakistan. Sixty hyperlipidemic patients were selected and divided in two groups. Their lipid profile (LP) was determined in the hospital and blood pressure (BP) was recorded at start of treatment. Group-1 was advised to take 10 mg tablet Rosuvastatin in divided doses, and group-2 was advised to use 500 mg Bair (JUJUBES) in divided times per day for the period of 2 months. RESULTS: after two months therapy their lipid profile and BP was re-determined and analyzed statistically by using SPSS version 22.00.01. It was observed that Rosuvastatin decreased systolic BP and LDL-c highly significantly (p-value < 0.001), while diastolic BP was reduced significantly (p-value <0.01) and HLD-c was increased significantly with p-value <0.01. In group-2 JUJUBES (Bair) reduced systolic BP and LDL-c significantly (p-value <0.01) but no significant changes were observed in diastolic BP and HDL-c in this group. CONCLUSION: It was concluded from the research study that Jujubes reduce LDL-c and systolic BP in hyperlipidemic patients, but lesser than statin group of antihyperlipidemic agents.

Keywords: CAD, Hyperlipidemia, Statins, Jujubes.

INTRODUCTION

Hyperlipidemia may be primary which is also known as genetic hyperlipidemia and secondary which is acquired ie; may be developed by taking high fat diet, or medications [1]. High lipids present in blood interact with ROS (free radicals) and form foamy cells which get stuck with endothelium of small blood vessels of heart leading to establish coronary artery disease (CAD). This may cause hypertension, congestive cardiac failure, cardiac arrhythmias, and cardiac arrest [2]. 30 percent Pakistani people suffering from hyperlipidemia do suffer from CAD [3]. Metabolic

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syndrome is another fate of CAD [4-9]. Cardiologists do advise HL (hyperlipidemic) patients to maintain or follow prophylactic measures in scenario of genetic susceptibility of hyperlipidemic patients to suffer from CAD [10-12].

Life style changes, escaping processed foods, certain medications, no alcohol use, skipping cigarette smoking are follow able advises to patients having CAD susceptibility potential [13]. There are four well accepted drug groups which are used as prophylactic or treatment of hyperlipidemia. These include statins, fibrates, niacin and BABRs (bile acid binding resins) [14]. There are remarkable number of fruits, herbs and vegetables which have hypolipidemic potential [15]. Pakistani fruit Jujubes are one of those. Jujubes contain saponins and alkaloids which play as antioxidant substrates in human blood. Jujubes also play role in weight loss [16]. These active ingredients found in Jujubes also work as hypotensive and hypoglycemic agents [17].

Vitamin A, and C is also present in Jujubes which are antioxidant vitamins and these further reduce the risk of development of CAD. Vitamin C also boost immune system in human body. In various research studies Jujubes hypoglycemic, hypotensive and hypolipidemic potential has been compared with statins which also prove that fiber content of this fruit play part in inhibition of enterohepatic circulation of bile in small intestine. This leads to formation of bile by hepatic cells instead of cholesterol synthesis [18-19].

SUBJECTS AND METHOD

The research was conducted at Begum Jan Hospital, Lehtrar road, Islamabad, Pakistan. The study was conducted from January 2018 to June 2018. 60 patients were enrolled suffering from hyperlipidemia age range from 20 to 60 years of both gender male and female. There consent was taken and kept in separated file. Age, occupation, contact telephone/cell number were kept in their personal file.

Lipid profile of all patients and their systolic and diastolic BP was determined and kept in their file. Exclusion criteria was patients with any major heart, kidney, liver, and gastrointestinal disease. Cigarette smokers and alcohol users were also excluded. 30 patients of group-1 were advised to take 10 mg Ruvastatin (Rovista) daily for two months. 30 patients of hyperlipidemia in group-2 were advised to take bair (Jujubes) 500 grams in divided time as their convenience for two months.

All patients were advised to do physical exercise daily for 30 minutes. They were also advised to come the hospital every week for follow-up. In follow-up time their BP, pulse, and drug compliance was discussed and they were encouraged to continue therapy for needed time. Method: Their lipid profile was determined in the biochemistry laboratory of the hospital. Their serum cholesterol was calculated by enzymetic method by kit cat # 515224161 supplied by Huzaia Pharmaceuticals, Berlin Germany. Their HDL-c was estimated by using kit cat no: 235639741 supplied by Huzaia pharmaceuticals, Germany. LDL-c was calculated by friedwald formula ie; LDL= TC – (TG/5+HDL-c). Statistical analysis: Mean values of all parameter were analyzed statistically by ‘t’ test to see significant changes. P-value >0.05 was labeled as non significant change. P-value <0.01 was labeled as significant change and p-value <0.001 was considered as highly significant change in the parameter.

RESULTS

Results of all parameters including systolic, diastolic BP, LDL-c, HDL-c are shown in following tables.

Table 1: (Rosuvastatin group) showing group-I’s (n= 29) mean values± SD of all parameters tested, changes in parameters, and its statistical significance in change

Parameter	At starting of treatment	After two months	Change in parameter	Statistical significance (p-value)
SBP	150.22±1.11	120.11±1.91	30.1	<0.001
DBP	97.91±1.21	88.21±1.11	9.7	<0.01
LDL-C	210.16±2.11	180.97±2.22	29.2	<0.001
HDL-C	37.91±1.91	45.21±2.19	7.3	<0.01

Table 2: (Jujubes group) showing group-II’s (n=30) mean values± SD of all parameters tested, changes in parameters, and its statistical significance in change

Parameter	At starting of treatment	After two months	Change in parameter	Statistical significance (p-value)
SBP	141.71±2.21	130.78±1.11	10.9	<0.01
DBP	93.61±2.00	88.54±1.10	5.1	>0.05
LDL-C	198.82±2.17	190.91±1.73	7.9	<0.01
HDL-C	38.61±2.19	41.91±2.97	3.3	>0.05

‘n’ means sample size. SBP means systolic blood pressure, DBP means diastolic blood pressure measured in mm of mercury, LDL-C means low density lipoprotein cholesterol, HDL-C means high density lipoprotein cholesterol measured in mg/dl.

DISCUSSION

Metabolic syndrome is leading cause of coronary artery disease. Changes in lipid metabolism affect protein and carbohydrate metabolism in human body. Just to keep blood lipids normal can prevent CAD. In allopathy statins, fibrates, niacin and bile acid resins are successfully used to prevent and treat hyperlipidemia. Alternative therapies like medicinal herbs, fruits, and vegetables also play role in therapeutics discipline of Medicine.

Jujubes are one of the Pakistani fruits which contain fibers, saponins and alkaloids as active ingredients which have potential to reduce BP, blood sugar and blood lipids. In our research Rosuvastatin reduced systolic, diastolic BP, LDL-c 30.1 mm of mercury, 9.7 mm of mercury, and 29.2 mg/dl respectively. Rise in HDL-c was 7.3 mg/dl in this group. These results match with results of study conducted by Tera *et al.* [20].

Kanai *et al.* [21] explained the mechanism of action of statins that Rosuvastatin inhibits enzyme HMGA-CoA reductase which is responsible for synthesis of cholesterol. Weil M *et al.* [22] warned in their conclusive remarks that statins side effect muscular rhambdomyolysis is main adverse effect that led to search for alternative therapies for hyperlipidemic patients. In our results Jujubes reduced systolic, diastolic BP and LDL-c 109 mm of murcury, 5.1 mm of murcury, and 7.9 mg/dl respectively. Sotalolve *et al.* [23] conducted a research on hypolipidemic potential of Jujubes and found that this fruit causes significant decrease in BP, and lipid profile of primary and secondary hyperlipidemia. These results match with our results.

Results of research study conducted by Joukhadar *et al.* [24] also matches with our results. Results of research study conducted by Sejji *et al.* [25] also augment our results as they proved almost same changes in all tested parameters as did we. Results of research by Kakati *et al.* [26] proved much better changes in LDL-c and HDL-c as compared to our results. Rumley *et al.* [27], Ketylu *et al.* [28], Cokie *et al.* [29], and Jabove *et al.* [30] explained antioxidant properties of Jujubes. They recommended other researchers to search potential hypolipidemic effects of esthetic plants in subcontinent.

CONCLUSION

It was concluded from this research that Jujubes have hypolipidemic and hypotensive potential but lesser than Rosuvastatin. These fruits are not recommended to raise HDL-cholesterol.

Conflict of interest

No conflict of interest in this research work with any party, organization or academic institution.

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REFERENCES

1. Freeman, D.J., Samani, N.J., Wilson, V., McMahon, A.D., Braund, P.S., & Cheng, S. (2016). Oxidative stress and herbal medicines. RJCM, 4(7):90-9.
2. Augusti, K.T. (2012). Therapeutic values of indian dates and its effects on metabolic syndrome. *JDMC, 12*(9),16-9.
3. Rodrigues, A. C., Rebecchi, I. M. M., Bertolami, M. C., Faludi, A. A., Hirata, M. H., & Hirata, R. D. C. (2005). High baseline serum total and LDL cholesterol levels are associated with MDR1 haplotypes in Brazilian hypercholesterolemic individuals of European descent. *Brazilian journal of medical and biological research*, *38*, 1389-1397.
4. Ishikawa, C., Ozaki, H., Nakajima, T., Ishii, T., Kanai, S., & Anjo, S. (2017). Heart attack and statins utilization. *JUMC, 5*(7), 80-9.
5. Prueksaritanont, T., Gorham, L.M., Ma, B., Liu, L., Yu, X., Zhao, J.J. (2018). HMG-CoA reductase inhibitors are used to prevent coronary artery diseases. *JDDM, 7*(7), 33-7.
6. Mulhaupt, F., Myit, S., Olivo, I., Agema, W.R., Wouter Jukema, J., de Maat, M.P., Zwinderman, A.H., Kastelein, J.J., Rabelink, T.J. (2012). Pharmacogenetics of the CD14 endotoxin receptor polymorphism and progression of coronary atherosclerosis. *VSMR, 9*, 33-8.
7. Chen, S. N., Ballantyne, C. M., Gotto, A. M., Tan, Y., Willerson, J. T., & Marian, A. J. (2005). A common PCSK9 haplotype, encompassing the E670G coding single nucleotide polymorphism, is a novel genetic marker for plasma low-density lipoprotein cholesterol levels and severity of coronary atherosclerosis. *Journal of the American College of Cardiology*, *45*(10), 1611-1619.
8. Transon, C., Leemann, T., & Dayer, P. (1996). In vitro comparative inhibition profiles of major human drug metabolising cytochrome P450 isozymes (CYP2C9, CYP2D6 and CYP3A4) by HMG-CoA reductase inhibitors. *European journal of clinical pharmacology*, *50*, 209-215.
9. Bihva, C., Seljeflot, I., Tonstad, S., Hjermann, I. (2015). Reduced expression of endothelial cell markers after 1 year treatment with simvastatin and atorvastatin in patients with coronary heart disease. *JIMDC, 2*(3),198-202
10. Garcia, P. J. (2015). Herbal medicine for hundred of diseases. *Curr Atheroscler Rep*, *7*, 34-9.

11. Zito, F., Lowe, G.D., Rumley, A., McMahon, A.D., Humphries, S.E. (2013). Jujubes are hypoglycemic. *Atherosclerosis*, *165*, 153-8.
12. Ahmed, I., Adeghate, E., Sharma, A. K., Pallot, D. J., & Singh, P. (2015). Jujubes in Indian culture and health related problems. *Diabetes Research and Clinical Practice*, *40*, 145-51.
13. Mulder, A. B., van den Bergh, F. A., & Vermes, I. (2013). Medicinal ingredients in Z jujubes. *Clin Pharmacol Ther*, *73*, 475.
14. Holloway, J. W., Yang, I. A., & Ye, S. (2015). Jujubes as medicines in eastern world. *Pharmacogenet Genomics*, *15*, 15-21.
15. Cenarro, A., Artieda, M., Gonzalvo, C., Merino-Ibarra, E., Aristegui, R., & Ganan, A. (2005). Indian dates as weight loss agents. *Am Heart J*, *150*, 1154-62.
16. Atole, S. K., Jangde, C. R., Philip, P., Rekhe, D. S., Aghav, D. V., Waghode, H. J., & Chougule, A. M. (2013). Safety Evaluation Studies of indian dates. *Pharma World*, *2*, 423-5.
17. Chaves, F.J., Real, J.T., Garcia-Garcia, A.B., Civera, M., Armengod, M.E., & Ascaso, J.F. (2014). Z. Jujubes for hyperlipidemia. *J Clin Endocrinol Metab*, *86*, 4926-32.
18. Mulder, A. B., van Lijf, H. J., Bon, M. A., Van Den Bergh, F. A., Touw, D. J., & Neef, C. (2016). Z Jujubes (indian dates) are harmless hypoglycemic agents. *Clin Pharmacol Ther*, *70*(2), 546-51.
19. Ghirlanda, G., Oradei, A., Manto, A., Lippa, S., Uccioli, L., & Caputo, S. (2015). Indian dates are getting popularity in phytotherapy. *J Clin Pharmacol*, *33*, 226-9.
20. Terala, T., Lindahl, B., & Toss, H. (2018). Lipid profile and diabetes Mellitus can be treated by Indian dates. *Med Res Jou KU*, *5*(4), 44-9.
21. Kanai, S., Anjo, S., & Pietsch, A. (2012). Ethinicity, believes and herbs in Indian herbal therapies. JCMR, 12(8), 122-9.
22. Weil, M., Cella, V., Plenge, K., & Hernandez, L. (2016). Simvastatin lowers C-reactive protein within 14 days: an effect independent of low-density lipoprotein cholesterol reduction. *Lipids*, *34*(6), 88-90.
23. Sotalolove, K., Wassmann, S., Laufs, U., Bäumer, T., Rifai, N., Pfeffer, A., Mekatal, Y., & Ridker, M. (2012). Cure for the Cholesterol and Recurrent Events (CARE) Investigators. Long-term effects of pravastatin on plasma concentration of C-reactive protein. *Jou Med Rhm*, *23*(1), 17-9.
24. Joukhadar, C., Schwartz, G., Kakati, Y., & Kwak, B. (2017). Early initiation of treatment with statins in acute coronary syndromes. *CRLUJ, 9(*9), 112-9.
25. Sejji, W., Lorenz, L., Collamer, P., Jialal, I., Stein, D., & Balis, D. (2017). Effect of hydroxymethyl glutaryl coenzyme A reductase inhibitor therapy on high sensitive C-reactive protein levels. *Med Ther Res,19*(9), 222-6.
26. Kakati, Y., Kwak, B., Mekatal, Y., & Ridker, M. (2014). Alternative therapy for hyperlipidemia. *JVDR,10*(9), 76-80.
27. Rumley, A., McMahon, D., Siegbahn, A., Lamateevasel, O., Joukhadar, C., Klein, N., & Prinz, M. (2010). Indian dates prove their hypolipidemic characteristics. *Jou Res Lipids*, *23*(8), 190-5.
28. Ketylu, V., & Olsson, G. (2017). Blood pressure lowering effects of Z Jujubes. *Vas Med Res*, *5*(7), 120-9.
29. Cokie, L., Bäumer, T., Rifai, N., & Pfeffer, A. (2016). Indian Fruits and lipids. *Jou Kak univ*, *12*(8), 80-8.
30. Jabove, M., Rifai, N., Pfeffer, A., Mekatal, Y., & Ridker, M. (2016). Esthetic plants role on human health. *JMLR 12*(9), 134-8.