

The effect of *Allium sativum* on blood biochemical factors in people with high blood cholesterol and diabetes

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ABSTRACT

Introduction

Two important dangerous factors of atherosclerosis disease are diabetes mellitus and cholesterolemia. From the old time garlic was used and several studies were accomplished about the effects of garlic on decreasing blood sugar and blood cholesterol that some of them proved this subject and some of them rejected that the objective of this research in the study of the effect of *Allium sativum* consumption on some of blood biochemical factors in persons with high cholesterol and diabetes.

Method

This clinical study was accomplished on 25 persons with necessary qualifications and with more than 126 mg in deciliter blood sugar and 245 mg/dl blood cholesterol. Each volunteer used 5 gr *Allium sativum* twice in a day for 42 days and then did not use *Allium sativum* at all for 42 days. 3 stages of phlebotomy was done as fasting in order to measuring the biochemical factors. The results were analyzed by using ANOVA test and $p < 0.05$ was considered meaningful.

Results

The average amount of fasting blood sugar ($p < 0.01$) and total cholesterol ($p < 0.001$) after 42 days *Allium sativum* consumption decreased meaningfully. But after stopping *Allium sativum* consumption it increased again. HDL-C increased meaningfully HbA1C decreased ($p < 0.05$). *Allium sativum* consumption did not show meaningful effect on creatinine urine of uric acid of cholesterol liver function tests with low.

Conclusion

With regard to current research results, it can be concluded that *Allium sativum* consumption can decrease total cholesterol of blood, FBS and HbA1C and can increase HDL-C so garlic can be useful in light diabetes mellitus and hyperlipidemic especially in persons that can not bear chemical medicines.

Key words: Hyperlipidemic, blood sugar increasing

INTRODUCTION

Artery sclerosis or Arterio sclerosis related to internal layer of blood-vessels that various factors have role in creating and progressing of it. Two factors of these are: diabetes mellitus and hyperlipidemic that by carrying it, one can prevent many indispositions of artery sclerosis. Diabetes is one of the oldest diseases that is recognized and its global occurring increase significantly in current decades

that in addition to creating artery sclerosis, it has other chronic indispositions, including.

And non blood-vessel indispositions. In most of countries, enormous expenditures spent for currying diabetes and hyperlipidemic yearly. Using herbaceous medicines begin to increase with attention to oldness of herbaceous medicine in Iran, low expenditure of its preparation with regard to chemical medicines and also very little

indispositions of its consumption as compare with chemical medicines .garlic was used for different purposes (as food and medicinal) since thousands years ago being that of its important remedial features ,one can point to decreasing blood pressure , anti cancer ,healing up wounds and decreasing blood sugar . many researches are done about the decrescent effects of blood fatness and heart –vessel disease as the result of garlic consumption .some time results were contradictory in these researches .allium sativum effects on blood's lipids are attributed to control of liver enzymes that are responsible for cholesterol synthesis and the decrescent effect of blood sugar are know as the result of increasing of insulin excretion from since the most of done studies were on animals and in none of them allium sativum used for research ,so in this research the effect of allium sativum consumption on decreasing blood sugar ,cholesterol and other blood biochemical factors in persons with high blood sugar and cholesterol was considered.

METHOD

In this chemical study, 25 persons(18 women and 7 men) of those who called on rafsanjani specialized pathology laboratory of medical university for requested tests of rafsanjani physicians and had below features selected for doing study.

- 1 total cholesterol of more than 245 mg/dl
- 2 the age of lower than 60 years old with the average(45+/- 2.14)
- 3 non-consumption of any effective medicine on blood sugar and cholesterol
- 4 donot having certain diet
- 5 propensity to cooperation till the end of project
- 6 non consumption of garlic for 7 previous weeks at least

With attention to this that only allium sativum was used in this research that is consumption is current in society therefore there is not any ethical problem with regard to consumption material. Necessary explanation was given to all the volunteers about the project and the manner of doing the study and if it was agreed the composed questioner was completed. Before

consuming allium sativum , in fasting condition , the blood sample was provided and blood sugar, total cholesterol,HDL-C,LDL-C. triglyceride ,urine, ceratinine , uric acid ,phosphate alkaline ,AST factors were measured by enzyme and total bilirubin method and hemoglobin glycos by chemical method in medical laboratory. Size and weight and blood pressure of persons were measured and recorded in questionnaire .volunteers consumed sgr packet allium sativum twice a day (in company with diner and lunch)for 42 days.after 42 day consumption of allium sativum phlebotomy was done for the second time in fasting state and also size and weight and blood pressure were measured again. After this stage studied persons did not consume allium sativum at all for 42 days and then mentioned tests were done for third times in fasting state and size and weight and blood pressure were measured and recorded. After doing tests and obtaining results data analyzed by SPSS software. For comparing blood factors ANOVA test was used in 3 stages of phlebotomy and in the event that the difference between averages were meaningful ,Toki-Kramer couple test for comparing the groups was used and $p < 0.05$ was considered as meaningful level.

RESULTS

25 persons that had total cholesterol of more than 245 mg/dl and fasting blood sugar of more than 126 mg/dl were considered in this study. Allium sativum consumption by these persons lead to decrease of fasting blood sugar in 42 days with($p < 0.01$) that at the end of study and by no consuming of allium sativum , it increases again. Also total cholesterol amount decreased at the end of 42 days of allium sativum consumption ($p < 0.001$),HDL-C amount increased during the study as at the end of 84 days had meaningful increase relative to the beginning of study($p < 0.005$).HbA1C decreased after 84 days of beginning of study($p < 0.05$).others biochemical factors of blood did not have any meaningful difference as the result of allium sativum consumption.

DISCUSSION

It is observed in this research that allium sativum consumption for 42 days has these effects

on serum lipids: total cholesterol level after 42 days consumption of 10 gr allium stivium decreased with $p < 0.001$ meaningful level. HDL-C amount showed increasing after 84 days at the end of study ($p < 0.05$). about triglyceride although decrease was observed after 84 days, it was not meaningful statistically. also LDL-C amount did not have any meaningful difference with attention to decrease after 42 day of allium stivium consumption. In Dr Rahmani study, cholesterol level and LDL-C decreased by recommending garlic powder for 12 weeks. the study of Kanar and his colleagues showed decreasing of cholesterol and LDL-C and LDL-C after 12 weeks consumption of allium stivium. In a research that was done by Mourkous, the consumption of garlic food complementary and fish oil for one month leads to decreasing of cholesterol, triglyceride, LDL-C and increasing of HDL-C. In accordance to Bertold and his colleagues study garlic oil consumption for 4 weeks did not have any effect on lipid and lipoproteins amount. also in Superkouniz study garlic powder consumption for 3 months did not have any effect on lipoproteins of HDL-C and LDL-C. In Slonig and his colleagues study on rats that were under low cholesterol diet, garlic consumption led to decrease of LDL-C cholesterol. with attention to mentioned researches and their comparison with the results of this study. It can be propounded that the results of the most of them are similar to our study and the difference of some of the studies can be related to kind and time of study because in this study unlike previous studies fresh allium stivium was used while in previous project powder with water extract or oily extract was used. In this study, allium stivium cause decreasing of fasting blood sugar of diabetic persons after 42 days consumption ($p < 0.01$) and decreasing of hemoglobin glycosylated, at the end of 84 days consumption with $p < 0.05$ meaningful level was observed. In previous studies any research on diabetic humans were not observed but there are researches about diabetic animals. In Shila and his

colleagues study on diabetic rats, the consumption of one of the main components of allium stivium named.

Caused decreasing of blood sugar. Also in Anour research in 2003 the recommending of garlic oil for 15 days in studies rats led to decreasing of blood sugar. The study of Ahmad and his colleagues showed the decrease of blood sugar in laboratory rats with regard to the consumption of allium stivium with regard for 4 weeks.

Other biochemical factors

In this research, the effect of allium stivium consumption on other biochemical factors was not meaningful. But in the study of Anour that in addition to blood sugar and lipids, measured the amount of serum enzymes like phosphate alkaline, phosphate acid and 6 phosphate liver enzymes, had meaningful decrease. The study of Ahmad showed the decrease of phosphate alkaline. It seems that the contradiction of this results with this study refers to the kind of study because above results were obtained in animals while our study is on human. With attention to obtained results in this research, it can be propounded that allium stivium cause decreasing of serum sugar and lipids. although the decrease that has remedial role require using of other remedial methods. Certainly, there are specified benefits in using standardized medicines for diabetes and hyperlipidemic but secondary indispositions of these medicines had limited the use of these medicines in some persons. Therefore inpatients that have the increase of blood sugar, and fatness and can not bear chemical medicines allium stivium can be effective and safe method.

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