Effect of Zingiber Officinale and Pistacia Vera Extract on Changes in Blood Factors HDL, LDL, Triglycerides and Total Cholesterol in Hypercholesterolemic Rabbits

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ABSTRACT

Introduction: the role of plants in reducing blood fats and thus reduces the risk of heart - coronary known disease. The main aim of this study pistachio and ginger juice mixed effects on blood factors and atherosclerosis in adult rabbits. Methods: 30 adult female rabbits produced 5 to 6 equal groups: control, sham 1, sham 2 and treatments 1, 2 and 3 respectively. No controlled substances were kept in standard conditions for control group. Corn oil sham 1 and group 2 sham received the same amount of cholesterol. Pistachio extract 1000 mg / kg body weight treatment group 1 and ginger extract at a dose of 2000 mg / kg body weight treatment group 2 rabbits and pistachio extract along with ginger and 1 g Cholesterol and 1 ml / kg corn oil gavage was given to the treatment group 3. Studies on blood factors and body weight changes were significant at the level of the data by ANOVA test (P <0.01) was determined by using SPSS version 15. Results: The results of the study showed that in control group 2, total cholesterol, triglycerides, LDL and HDL were found to be significantly increased (P <0.01). In groups 1 and HDL cholesterol showed a significant increase compared to the control group (P <0.01). HDL level increased significantly in treatmental groups 2 and 3 compared to the control group was observed. Weight of laboratory animals in treatmental groups 2 and 3, sham 1 and 2 showed a significant decrease compared to the control group (P <0.01). Conclusion: The results show that pistachios and ginger extract improves symptoms of atherosclerosis in hypercholesterolemic rabbits are effective.

Key words: Pistachio, Ginger, Cholesterol, Atherosclerosis, Rabbits.

Introduction

Today, the use of synthetic fats and chemical drugs such as Lovastatin, Clofibrate, Gemfibrozil, nicotinic acid and is widely prevalent in industrialized societies and is urbanized. Besides the high cost of these medications the patient is imposed, some of them have many negative side effects. This makes today special attention to medicinal plants. The use of medicinal plants and its products in Iran and other countries have a history and the chemical composition of the drug product with the relative efficacy and side effects are minimal. The role of plants in reducing blood fats and thus reduces the risk of heart - coronary known disease [1]. Tree Pistacia vera, are owned Rutalea and Anacardiaceae. Genus Pistacia of the year in 1753 was named by Linnaeus Karen Noon. This genus, with 11 species, all of which they themselves produce turpentine. Plants such as trees and shrubs are dark [2, 3]. Pistachios contain 59 percent fat component, which includes the 6/9 percent palmitic acid, 3/1 percent Palmytvlyyk acid, 1/3% of stearic acid, 69% oleic acid and 17% is Bynvlyyk [4]. Pistachio extracts including cyclohexane, which is the main ingredient of b-Sytvstrvl, sequlene, oleic acid, palmitic acid and other nut extract, Metalonic acid has antioxidant effects that are dull because there is little Gallic and Kanchyn that is a mild antioxidant effects that reduce serum cholesterol levels and reduced aortic stiffness and prevent platelet aggregation and reduce blood pressure is small [5]. Omidi et al (1386) The effects of turpentine powder on phosphate phosphatidate hydrolase enzyme activities and lipid profiles were studied in rats. The results showed that the pistachio nut consumption is reduced liver triglycerides [6]. The scientific name Zingiber officinale Ginger contains compounds such as 3/2% protein, 9/0% fat,
get used to the new circumstances after the test.

Experiment the animals were given a grace period to was purchased. One week before the start of the Animal Breeding and maintenance of medical school approximately 30 129 ± 2000 g from the center of female New Zealand White rabbit weighing laboratory animals has been observed. A Wistar adult

Methods:

In all of the research ethics of working with laboratory animals has been observed. A Wistar adult female New Zealand White rabbit weighing approximately 30 129 ± 2000 g from the center of Animal Breeding and maintenance of medical school was purchased. One week before the start of the experiment the animals were given a grace period to get used to the new circumstances after the test period began. An animal in experimental conditions, including temperature, 2 ± 22 °C and 12 h light and 12 h dark cycle was used. Rodents used in food animals and food and water were free. Turnip extract the lethal dose was determined. LD50 dose was determined by the method that this is based on previous studies, a certain amount of rabbits died within half an LD50 was Based on the above doses were determined. In the present experiment, the same lethal dose of 800 mg kg body weight was measured in laboratory animals.

For the extraction of pistachio and ginger separately using an electric grinder to powder and Sox let extraction method we use, in this way, for every 10 grams of nuts or ginger powder, 200 ml of the solvent containing water and ethanol is added to make. And throw in a sox let apparatus and the solvent to extract Rota vapor are separated or we have the solution for 48 hours at room temperature and put in place and the solution is stirred several times a day until all soluble material is dissolved in water and alcohol. Then the solution is filtered and the filtrate fluid about a week in a lab environment and in the temperature range 30 to 35 °C to evaporate the water and alcohol and highly concentrated liquid is extracted and stored in the fridge, then the solution [18]. The mice were randomly divided into 6 groups of 5 and imposed conditions on these five groups are as follows:

Control group: normal diet, no matter
Sham group 1: day 1 ml of corn oil (vehicle-cholesterol) was given as gavage.
Sham group 2: 1 g/kg daily according to any of cholesterol in rabbits given gavage.

Treatment group 1: 1 gram per kg of body weight per day of cholesterol, and pistachio extract 1000 mg kg was given as gavage.
Treatment group 2: one gram per kilogram of body weight of cholesterol, ginger extract, at a dose of 2000 mg per kg of body weight was given as gavage.
Group 3: one gram per kilogram of body weight of cholesterol, 1000 mg kg pistachio extracts and ginger extract at a dose of 2000 mg per kg of body weight was given as gavage.

At the end of the period, all groups of rabbits were weighed after anesthesia, directly into the heart, where blood samples were taken and serum was separated. The factors related to changes in HDL, LDL, triglycerides and total cholesterol were measured. To compare the effects of pistachios and ginger extract, statistical analysis of ANOVA followed by Turkey's post hoc test was performed using SPSS software and significance level (P <0.01) were selected. The results of the statistical analysis results are shown in chart to Excel.

Results:

Measurement results show that the TC sham 1 and sham 2 had a significantly increased compared
with control requirements. Also, treatmental group 1 than in sham1 also showed a significant increase (Fig1) (P <0.01).

![Fig. 1: Comparison of different groups from the viewpoint TC (P <0.01).](image)

The results of the measurements show that the concentration of triglycerides, only sham 2 had a significant increase compared to the control group and the other groups did not change significantly (Fig. 2) (P <0.01).

![Fig. 2: Comparison of different groups from the viewpoint TG (P <0.01).](image)

Measurement results show that HDL in treatmental groups 1, 2 and 3, and also sham 2 significant increase compared to control has been observed in the treatmental groups 1, 2 and 3 than in sham 1 showed a significant increase (Fig. 3 ) (P <0.01).

![Fig. 3: Comparison of different groups from the viewpoint HDL(P <0.01).](image)

The results of measuring LDL concentrations significantly increased in sham 2 compared to control group was observed. Also treatmental groups 1, 2 and 3, a significant decrease was noted in the sham 2 (Fig. 4) (P <0.01).
Fig. 4: Comparison of different groups from the viewpoint LDL (P <0.01).

According to the results of measuring the weight of the animal was the treatmental group 1 compared with the control group did not show significant increase but other treatmental groups and both sham groups showed a significant decrease compared to controls (Fig. 5) (P <0.01).

Fig. 5: comparison of different groups from the viewpoint body weight (P<0.01).

Discussion:

In an experimental study in groups 2 and 3, saw 1 and 2, a significant decrease in the weight of laboratory animals is the diagram (5). According to previous research stated that the weight change was not significant after the effect of pistachio extract a slight increase has been seen [19], which is consistent with current research. The investigation also stated that with the increase of cholesterol in the body's satiety center in the hypothalamus is stimulated by various substances and enzymes [20, 21]. Since the two groups in the study of cholesterol, triglycerides and LDL has increased significantly reducing weight is reasonable. The effect of ginger on some cardiovascular risk factors in obese men expressed that the use of ginger to reduce weight is by using resistance exercises [22], which is consistent with current research. Where it appears to reduce lipid extracts of ginger and pistachio are the logical that reduce body weight but also affecting conditions such as keeping animals and gavage experiments in animals have not found ineffective. In the present study, the concentrations of total cholesterol in group 1 than in the control group showed a significant increase, HDL concentration in the experimental group 1 is significantly increased compared to control. According to past research, the proven fact that oxidative stress plays an important role in atherosclerotic disease and degenerative diseases associated with the aging [23, 24]. Consequently, the use of antioxidant supplements in the diet to help the poor can help the body against damage caused by oxidative stress potential. In recent decades, researchers’ extraction of natural antioxidants such as flavonoids and polyphenolic compounds are very interested and stated that these compounds can be used as street cleaners’ free radicals [25]. Research has shown that pistachios plant in the family Anacardiaceae that is used in different parts and have different biological activities such as anti-oxidant, anti-microbial and anti-inflammatory effects are mainly due to flavonoids and other phenolic components it is [26-32]. Another study presented at the nut is a rich source of phenolic compounds with antioxidant properties, is high [33, 34]. The researchers expressed the same plant extracts containing flavonoids are pistachio thistle-
like plants have a positive impact on the improvement of several diseases, including improved blood fat [35, 36, 37]. As was stated nuts also contain flavonoids, which is plant with thistle extract has the same effect. In another study in which the effects of pistachios on atherosclerosis in hypercholesterolemic rabbits have stated that the pistachio extract is increasing HDL [38]. The research also stated that pistachios contain a flavonoid called catechin polyphenols that have a particular strong antioxidant activity [39]. Other studies have also been expressed about the pistachio extract is a very slight increase in total cholesterol [38], which is consistent with current research. Research on Pistachios contain 59% fat, 6/9 percent palmitic acid, 3/1 percent palmitic acid, 1/3% of stearic acid, 69% oleic acid and 17% linoleic acid [40]. That can cause cholesterol to increase partly attributed to the fact that any nut up a bit with saturated fatty acids also. According to what was mentioned it can be stated that the nut is useful for improving symptoms of cardiovascular disease. In the present study, HDL cholesterol was significantly higher in group 2 than in the control group. LDL cholesterol concentrations in group 2 than in group 2 had significantly lower. The research indicated that most effects like reduced fat or sugar, ginger and anticancer activities of this plant, particularly the mechanisms modulating the inflammatory process takes place [41]. In line with several reports have shown anti-inflammatory effects of this plant, the active ingredient in plants like ginger, Shogoal and curcumin inhibit the production of prostaglandins and nitric oxide, as well as the ability and IL are involved in inflammation [42]. However, the previous studies have indicated that atherosclerosis is an inflammatory process [43]. In research conducted in the past stated that the effect of ginger in reducing triglyceride levels was even stronger than the Glamyd drug Glibenclamide [44]. Ginger also stated that the lower blood LDL concentration has been successful [44]. Ginger also has been an increase in HDL [44], which is consistent with current research. Reduce LDL Bhandari results are similar to control group 2 [44, 46]. According to previous research stated that ginger may reduce triglyceride concentrations that the effect of this action on the glucose enters the Krebs cycle does [45, 46]. On the other hand, anything that can reduce the synthesis of triglycerides also reduces LDL synthesis [44]. In the present study the changes in triglycerides in group 2 than in group 2 were not significant. HDL concentrations were also expressed in relation to the past is injections of ginger juice increases HDL [46], which is consistent with current research. In the past, stated that the reduction in HDL levels the risk of heart disease - a vascular 5/1 to increase [47]. Thus, the increase in group 2 compared with the control group, the study is useful. According to the results of research that has been done in the past, it can be stated that Ginger can reduce the risk of heart disease and as stated by the effect of the active ingredients like ginger and Shogoal does. This is a significant increase in HDL levels with all three groups that most of this increase can be seen in the experimental group 2, this indicates a positive effect of ginger extract is nuts. Cholesterol levels increased significantly in group 1 than in the control group shows while the third group is not a significant change in the total cholesterol and in group 3 than in group 1 had a decrease of meaningless. LDL level was also significantly lower in group 2 than in group 3 has shown; this is lower than in groups 1 and 2 at the higher level. So we can say whatever saying that that the use of extract of ginger nuts and properties are effective in improving symptoms of atherosclerosis, as is clear ginger juice is effective in reducing the risk of atherosclerosis.

Conclusions:

According to the studies done and the antioxidant properties of ginger juice and ingredients like ginger and Shogoal and polyunsaturated fatty acids found in nuts and extract the juice increases HDL cholesterol in this study consist two group, We can conclude by saying that the atherosclerosis has a beneficial effect in reducing the effects of pistachios and ginger, but ginger is somewhat more effective than pistachios.

References

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