



Research Article

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A comparison between aerobic exercises and lipoherb supplement on ALT, AST, ALP and GGT levels of men with nonalcoholic fatty liver

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ABSTRACT

Current study was carried out to compare the effects of eight weeks aerobic exercises, using lipoherb capsules, and a combination of both on the levels of ALT, AST, ALP and GGT in men with nonalcoholic fatty liver. Forty men with nonalcoholic fatty liver, average age of 37 ± 8 and average weight of 94 ± 6 were divided randomly into four groups with 10 members in each group: control, exercise, lipoherb, and exercise+lipoherb. Exercise group did walking and running on treadmill, pedaling on a bicycle ergometer and L-optical with 55% maximum heart beating in first week and 40 % in last week. Lipoherb group used three capsules daily before each meal, and combination group used capsules plus exercises. ALT, AST, ALP, and GGT levels in blood were measured before and eight weeks after treatments. Obtained data were analyzed using one way analysis of variance and means were compared using Tukey test at 5 % probability level. ALT and AST levels of serum were reduced significantly in all three experimental groups whereas ALP and GGT amounts were not affected. The highest reduction was related to combination group. Overall, patients with nonalcoholic fatty liver are recommended to do aerobic exercises plus using lipoherb capsules to reduce ALT, AST, ALP, and GGT enzymes.

Keywords: lipoherb capsule, ALT, AST, ALP, and GGT

INTRODUCTION

Nonalcoholic fatty liver disease is abnormal increase in fats of liver cells. These cells may be involved in inflammation and be destroyed which leads to chronic, irreversible cirrhosis. About 30 % of Iranian people have extra fats in liver which is due to inappropriate nutrition, Obesity, gluttony and using some drugs [1].

According to previous researches, weight and fats reduction and resistance to insulin help improvement of nonalcoholic fatty liver disease [2]. Fat accumulation has been reported in various situations such as inactivity [3], obesity [4, 5, 6], increased secretion of free fatty acids from exogenous and endogenous sources, particularly in the areas of visceral [3], increased lipogenesis and irregularities in beta oxidation [3, 6], diabetes Type II [7], small diverticulosis and consumption of certain drugs such as amiodarone, glucocorticoids, synthetic estrogens, insulin, chloroquine and Tamrexifn[5, 8]. In many cases also any obvious reason has been reported for disease [4]. Symptoms of the disease which appear rarely include spider angioma, red palms and accumulation of fluid in the abdomen, enlargement of the spleen [9] lethargy, constant fatigue and feeling of pressure or pain in the abdomen and right upper area of the patient. Increase in liver enzymes including aspartat aminotransferase, alanine aminotransferase, gamma glutamine transpeptidase and alkaline phosphatase are the signs of this disease [10].

The main treatment for this disease is removing the causes of diseases. Weight loss in obese patients, controlling the diabetes, reducing blood fats, quitting alcohol drinks, changing the lifestyle and doing exercises are the most important bases of curing this disease [11].

Many previous studies on human samples showed that regular exercise and partly diet affect improvement and treatment of insulin resistance, and other factors interfering in metabolic syndrome and overweight which can cause fatty liver, but few studies exist about positive and direct effects of NACH and NAFLD [12, 13].

Sometimes people cannot do exercise and have to use drugs. Most of patients also cannot tolerate side effects of chemical drugs. But biological matters from herbal origins have few side effects. Using herbal medicine in Europe and United States has been increased considerably so that 65 % of patients with fatty livers in these countries use herbal drugs[11].

In current study the effects of aerobic exercises, using lipoherb capsules, and a combination of both on patients with nonalcoholic fatty livers were studied. Studies and presented methods to cure this disease have targeted to weight reduction and eliminating unwanted belly fats.

EXPERIMENTAL SECTION

The method of study was semi- experimental (quasi-experimental) with pre- test and post – test (2014).Samples were forty men with non- alcoholic fatty livers. These men did not use alcohol, narcotics, fat inducing drugs such as corticosteroids, androgens, synthetic estrogens, towexis or vitamin A and did not suffer from cardiovascular or pulmonary disease. They also did not have regular exercises or diet. Therefore the selection of samples was objective.

The power of method was more than 0.7 using SPSS program. So, 10-15 members were enough for each group: An aerobic exercise group, lipoherb group and combination group, and control group which received placebo during the period.

Patients were aware of the method of study and potential risks. Height, weight, waist and hip circumference were measured and blood test was done after a 12 hours overnight fasting. Blood samples (20 ml) were taken from the antecubital vein. The amount of serum aminotransferases were measured using kinetic enzyme method. To this, mixture of substrate and coenzyme liquids was placed in water bath for 10-15 minutes and then serum was added to it and enzymes were measured using photometerokits of Pars Azmoon Company.

Supplementation group received three capsules every day after meal. Combination group did exercise 3 days a week for 45 to 60 minutes and received three capsules every day. Placebo group used also three capsules every day.

Increasing aerobic exercises were supervised by a coach: 10 minutes warming, and five minutes cooling. Exercise intensity was 55 to 70 percent of heart rate reserve including bicycle ergometer, L-optical, treadmills, aerobics, and main movements of the upper body, abdominal and lower back. The first session was 20 minutes and 1 to 2 minutes was increased weekly so that in six- eight weeks the time of aerobic exercises was 30 minutes.

Training intensity was calculated based on the ratio of maximum heart rate for each patient by Karonen method and was controlled using Polar heart-rate control made by Finland. Results were analyzed using paired t- test for comparisons within groups and one way analysis of variance for comparing groups. Tukey test was also used. Analysis was carried out using SPSS at 5% probability level.

RESULTS AND DISCUSSION

Normality of data was evaluated using Kolmogorov-Smirnov test which showed normal data, and therefore parametric tests were used. Averages and standard deviations of biochemical variables are presented in table 1. Samples had average age of 37 ± 8 , weight of 94 ± 6 , and biomass index of 28 ± 3 .

Table1. Averages and standard deviations of biochemical variables

Variable	Group stage	Before exercises	After exercises
ALT(U/L)	drug	59.80±9.98	54.40±0.39
	exercises	53.00±11.87	38.40±13.39
	drug+ exercises	71.208±9.20	49.00±13.26
	placebo	60.95±11.59	59.60±14.81
AST(U/L)	drug	32.80±6.30	29.2±5.06
	exercises	42.00±13.67	33.60±14.53
	drug+ exercises	50.20±7.52	36.80±5.549
	placebo	46.40±16.05	47.40±16.05
ALP(U/L)	drug	174.2±19.60	150.4±38.48
	exercises	137.8±61.15	113.2±34.33
	drug+ exercises	141.6±30.11	118.8±9.01
	placebo	138.20±60.76	138.6±61.05
GGT(U/L)	drug	50.20±19.52	35.20±8.58
	exercises	49.99±7.41	37.40±4.92
	drug+ exercises	48.60±4.09	34.00±5.25
	placebo	49.30±12.90	49.43±18.33

One way analysis of variances showed that groups were not significantly different in weigh, body mass index and biochemical variables at the beginning of period.

Plasma amounts of ALT were significantly different. It was 9.03 % in lipoherb group, 27.55% in exercise group, 31.18% in combination group and 9.03 in control group. Tukey test results showed significant differences between groups ($p < 0.05$).

AST amounts of various groups were also significantly different ($p < 0.05$). It was 10.98% in lipoherb group, 20% in exercise group, 26.69% in combination group and -2.11 in control group. Tukey test results showed significant differences between groups ($p < 0.05$). The plasma amounts of ALP and GTT were not different in various groups.

Although fatty liver destroys liver parenchyma and goes toward cirrhosis very slowly, this disease is really important due to its high prevalence in communities [14, 15]. Results of current study showed significant effects of increasing aerobic exercises, lipoherb supplements and combination of both methods on ALT of male patients with nonalcoholicsteatohepatitis, considering the reduction in body weight, body mass index and waist circumference.

Grett John et al. [16] studied a controlled aerobic exercise plan which reduced stomach lipid and liver fat and improved ALT amount of patients. Josla proved also that fitness is very effective in curing liver enzymes and is proven via medicinal plants such as purslane, barberry, f and ... [17].

Ghorbani in a one session study did not observed any obvious change in ALT amount [18]. The most important reasons of different results are the length of study period, exercise nature, intensity and amount of aerobic exercise, individual differences, and number of samples and errors of laboratory kits.

Previous studies have shown that sport activities reduces fats weight and liver enzymes finally which is in agreement with our results but using lipoherb supplement cause fat burning in body considering the extant plant complex and combination of sport activities and lipoherb supplement caused significant difference in ALT improvement.

The AST amounts of experimental groups were different. Reduction in serum aminotransferases can be ascribed to decrease in disease pathogenesis factors and cell destruction, improvement of liver cells and reduction in hepatocytes inflammation [10]. ALP amount was not different in various treatment groups. Each of lipoherb making plants has many pharmacological effects which reduce triglyceride or blood fats lonely or in synergism. Plus reducing LDL, they also increase the HDL amount. Artichoke leaves have cynarine and chlorogenic acid which interrupt cholesterol biosynthesis and reduce blood lipoproteins.

Furthermore, extant compounds in artichoke and fenugreek have controlling effect on lipogenase enzyme and reduce blood triglyceride. Complex of fat reducing plants in lipoherb capsules reduce LDL and triglycerides of blood considerably and increase HDL [14].

Sport activities increase GLUT4 and skeleton muscle protein which is followed by better glucose consumption and reduced insulin resistance; therefore, sport activities have positive effects on treatment control and prevention of NASH disease [13].

In a concluding remark, diet therapy plus fat burning supplements such as medicinal plants for 24 weeks had considerable effects or reducing aminotransferase factors of patients' serum[17]. This positive effect of capsules was not observed in our eight weeks study. But it can be announced that adding exercise to supplement can reduce 24 week period to eight weeks and has more desirable changes which shows the optimal effect of exercise, supplementation in the prevention and treatment of disease. More studies are recommended to investigate longer time, different training protocols (resistance - combination), active people, different doses of supplementation with controlling individual and genetic differences.

CONCLUSION

Overall, patients with nonalcoholic fatty liver are recommended to do aerobic exercises plus using lipoherb capsules to reduce ALT, AST, ALP, and GGT enzymes.

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