SCHIZOPHRENIA ANXIETY BIPOLAR DISORDER ORTHOPAEDIST
SUPERVISION ADULT CHILDREN THERAPY OPHYHALMOLOGIST
HEALTH HEALTH PSYCHOLOGY WELL-BEING
BEHAVIOUR HEALTH-CARE SOCIAL CHANGE FAMILY
CHILD PSYCHOLOGY CHRONIC DISAESES
CLINICAL RESEARCH CBT COMUNITY
DELIRIUM PHYSICAL HEALTH RADIOLOGY ETHICS
NURSING GENETICS
CARE LIFE HOSPITAL
PHARMACY LEGAL ISSUES
MEDICATION
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icH&Hpsy
MEDICAL MENTAL ILNESS RESILIENCE
HOSPITAL LIFE CYCLE
PERSONALITY LIFE STYLE
ONCOLOGY DEPRESSION GENDER
C-crcs

Effect of *Peganum harmala L.* on Lipid metabolism and changes HMGcoA reductase in Hypercholesterolemia-induced Male Wistar Rat

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Introduction

Hypercholesterolemia is a problem faced by many societies and is a cause of concern for health professionals, since it constitutes one of the major risk factors for the development of cardiovascular diseases, such as atherosclerosis and it`s complications, acute infarction of the myocardium or hypertension (Gomes et al.,1998). In addition, there is a close correlation between these diseases and lipid abnormalities, especially high level of plasma cholesterol, and blood pressure (Mahan et al., 1998). Recently, the effects of dietary components on hypercholesterolemia and atherosclerosis have received much attention. However, the antioxidant effect of the major compounds of this plant (harmine and harmaline) and related extracts have not been investigated thoroughly.

Methods

The experiment used 64 male Wistar rats each weighing approximately 200±15 g that was obtained from Academic Center for Education, Culture and Research(ACECR), Qom, Iran. Animals were divided into eight groups in a controlled environment with 12 h light and dark cycles ،At 22-25C˚ and humidity 45-50% humidity. The room was lighted from 06:00 to 18:00 hours.

experiments were conducted. In the first experiment,: G1) control, G2) control plus 100mg/kg, G3) control plus 200mg/kg, G4) control plus 400mg/kg. , G5) 1%cholesterol, G6) 1% cholesterol plus 100mg/kg, G7) 1% cholesterol plus 200mg/kg, G8) 1% cholesterol plus 400mg/kg, In experiment 2, diets G5,G6,G7 and G8a diet of 1% cholesterol were fed stock diet for 4-week pre experimental period .
At 12 weeks of age in experiments 1 and 2, diets and water were provided ad libitum. Each dietary treatment group was composed of eight rats in experiments 1 and 2.

Methanolic extraction of P. harmala.
P. harmala were collected in the month of May 2013 from desert of Qom city (Figure 1). To obtain methanolic extract 2 kg powder P. harmala of ground was immersed in 10 liters 80 % (v/v) aqueous methanol at room temperature for five days and filtered through Wattmann Filter Paper (No.42). Extraction by Barij Esans co.(Golkaran Ltd.), kashan City. The extract was then transferred to a glass bottle and stored in refrigerator before use.
Sample collection
At the end of experiments, animals were fasted for 16 hours and weakly anesthetized with phenobarbital.Then, blood samples were taken by cardiac
puncture into vacutainer tubes (Becton-Dickinson,Dickinson and Co., Rutherford, NJ)
. Immediately after blood sampling the liver was excised, washed in chilled saline solution,blotted and cooled in crushed ice. A part of
the liver was used for enzyme assay and the rest of the liver was kept at ât -165C° .
Assay kits and Biochemical determinations.

Methodology cPlasma glucose concentrations were determined using the Clinical Chemistry system (Pars Azmoon Co, IRAN).Plasma triglycyride was analyzed enzymatically using Tri-Es®(Pars Azmoon Co, IRAN), The separation of plasma lipoproteins and analysis of total plasma cholesterol and each lipoprotein cholesterol were performed using a lipoprotein profiling system (Beckman Instruments, Inc., Fullerton).
RNA preparation and real-time RT-PCR
Total RNA was prepared from frozen liver Extraction of RNA and reverse transcription of RNA to cDNA was performed using RNX-Plus(CinnaGen,Karaj,Iran) and 2-steps RT-PCR Kit(Vivantis,UK), respectively, due to manufacturer instructions. Real time-PCR performance using SYBRGreen PCR Master Mix (Amplicon) and Rotor-Gene 6000 Series software version 1.7.65 (Corbett Life Science), and primers of each gene were designed as follows utilizing primer 3 program.The reaction was initiated by heating to 95°C for 15 min., followed by 40 cycles of elongation at 58°C for 30 sec and denaturation at 95°Cfor 15 sec.
Statistical analysis.
Data were expressed as mean ± standard deviation. In order to compare the groups, analysis of variance (ANOVA) was used. P < 0.05 values were considered to be statistically significant.
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Results

Results hereIn this study,we further investigated the protective effect of Peganum harmala on examination parameters in rat Significant differences (P<0.05)that shown in (Table 1).
Effect of P.harmala L 200,400 mg/kg dosage on average body weight(g) in treatment group and control group Significant differences (P<0.05)(figure 2)
Low density lipoprotein (LDL) and cholesterol and High density lipoprotein (HDL) cholesterol Significant differences (P<0.05) .To our knowledge, no such data has been reported regarding effects of P. harmala on LDL cholesterol, however, effect of other medicinal plants has been reported for LDL decreasing potentials (M Eini, et al, 2014).
were recorded between the control group and treated groups as well as among the treated groups at all recorded stages There was gradual increase in the HDL level with increasing level of P. harmala at all recorded stages in all groups. However, other medicinal plant shave been explored for their HDL increasing potential.(Figure 3)(Figure 4)
. The effect of different levels of P. Harmala methanolic extract on serum vLDL,cholesterol, Glucose Significant differences (P<0.05) in rat is presented in (Table 1)(Figure 4).
Lowering Effect of P.harmala L 200,400 mg/kg dosage on Triglycirid in treatment group and control hypercholesteromia and 200 mg/kg dosage compare by control group Significant differences (P<0.05) (figure 3)(figure 4) HMG COA reductase activities: the P.harmala supplementation further decreased these enzyme activities. P.harmala at the 100 mg/kg dose was similarly effective on lipid metabolism but diffrences was not Significantly, but in,400 mg/kg doses increased these enzyme activities was Significantly(P>0.05)(Figure 5)(Figure 6)

Results here

Table1.effect of P.harmala on hypercholesteromia and control rat

Parameter/group	control	Cholesterol 1%	Control plus 100mg/kg	Control plus 200mg/kg	Control plus 400mg/kg	Cholesterol 1% plus 100mg/kg	Cholesterol 1% plus 200mg/kg	Cholesterol 1% plus 400mg/kg
Plasma triglyciride	173±17	192.37±10	190±13	164±16[a]	165.5±8	179.87±14	150±15[b]	160.75±14[b]
Plasma glucose	121±14	173±12	146±19	144±8	137±2	155±17[b]	140±16[b]	201±21[b]
Plasma cholesterol	119±35	193±10	128±13	131±6	126±5	101±7[b]	103±14[b]	112±36[b]
VLDL cholesterol	35.75±4	47.62±2	33±6	33±3	38.37±2	36±2[b]	33.5±6[b]	32.25±2[b]
HDL cholesterol	46±3	54±1	55±6	45±2	22±5	50.5±0.5[b,a]	43.5±6[b,a]	43.5±1[b]
LDL cholesterol	32.25±2	59.25±5	31.62±2	26.12±6	25.12±2	42±2[b,a]	34.5±2[b]	24.5±4[b,a]
Body weight after 8weeks(g)	272±8	335±9	258±6	253±14[a]	296±7	216±15[b]	242±13[b]	286±10[b]

Animals of cholesterol were received fed cholesterol diets 1% for 4-week pre experimental period
Then treatment groups for 8 weeks, diets and water were provided ad libitum. Each dietary treatment group was composed of eight rats
The significant difference(P<0.05) compared with control group) The significant difference(P<0.05) compared with cholesterol 1%group

Conclusion

Conclusion h The effects of different levels of P. harmala methanolic extract on total cholesterol were presented in (Table 1). Decrease in total cholesterol by 100 mg/kg P. harmala was due to the inhibition of 3-hydroxy-3methyl-glutaryl-CoA (HMGCoA) reductase by different alkaloids harmine, harmaline, and harmol present in P. harmala. These alkaloids have also been reported to have hypoglycemic properties (Singh et al, 2008).so, decrease in Level of Cholesterol in the other groups(200,400 mg/kg P.harmala) that have been associated with increased HMGCoA reductase enzyme levels may be due to the excretion of bile acids
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