

The Effect of Rifadin Drug on Lipids Metabolism of Rabbits

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Abstract

The aim of this study was intended to study the effect of rifadin drug on lipids metabolism in the blood of the rabbits .Eight rabbits were used in the experiment ,they were divided into two groups ,first group(control group) was administrated with 15mg/ml /day normal saline for 35 days ,while the second group (treated group)was administrated with (15/mg /kg/day) for 35 days of rifadin(capsule 300mg/kg).This study examined the influences of rifadin drug on the concentration of cholesterol , triglycerides , HDL ,LDL and VLDL in rabbits sera .The result showed that there were no significant increased ($p>0.05$) in cholesterol concentration in rifadin treated group compared with control group ,and there were no significant increase ($p>0.05$)in LDL and HDL concentration in rifadin treated group compared with control group ,where the result showed that there was a significant decrease ($p<0.05$)in triglycerides and VLDL concentration in rifadin treated group compared with control group .

It was concluded that the rifadin drug has a negative effect produced dysfunction on lipids metabolism in blood.

Keywords: Rifadin drug, lipids metabolism , lipids profiles .

Introduction

Cholesterol is a fatty substance steroid normally found in all body cells and plasma ,the body uses cholesterol to help build cells and produce hormones, it travels through the blood attached to a protein , this cholesterol –protein package is called lipoprotein , 75% of the cholesterol is bound to low density proteins (LDL the bad) and 25% is bound to high density proteins (HDL the good) .

Triglycerides are a complex dietary lipids composed of a glycerol and 3 fatty acids (made up of 50% fat and 50% sugar) it is stored mainly in the liver and it is an important source of energy, its transported by very low density proteins (VLDL) and HDL [1]The liver represents the main site of cholesterol and triglyceride metabolism [2], in the blood lipid are transported as a globular high molecular weight lipoprotein particles , lipids contents gradually undergo metabolism in various tissues including the liver and blood . Cholesterol and HDL are produced in the liver and plasma [3]. The lipid profiles include the test :- total cholesterol , triglyceride , HDL , LDL and VLDL [4] . Rifadin is an important drug in the treatment of tuberculosis [5],[6] its an affective antibiotic against gram –positive bacteria inducing mycobacterium [7] ,rifadin inhibits DNA –dependent RNA –polymerase activity and protein synthesis in bacteria [8], it has a significant activity against Neisseria Meningitidis isolated [9] rifadin is an enzyme induce and enhance formation of reactive metabolism [10]and an oral dose of 600mg once or twice daily can eliminate the majority of meningococci from caries[5].

Rifadin drug found to cause an increasing in the rate of T3 and T4 metabolism [11] anemia [12], thrombocytopenia and leucopenia [9] , reduced the level of glutathione [13] and the level of lipids [14].

The aim of this study was intended to study the effect of rifadin drug on lipids metabolism in the blood of the rabbits.

Material and Method

Eight mature rabbits weighting a bout (1200— 1700)gm were used in this experiment .Animals were kept under slandered laboratory conditions and were given food and water ,animals were divided into two groups and were subjected to experimental schedule as follows :first group(control group) was administrated daily with (15gm/ml/day) normal saline for 35 days and used as a control group , second group(treated group) was administrated daily with (15gm/kg/day) of rifadin capsule (300gm/kg) from(Mumbai , ajanta) .This schedule continued for consecutive for thirty five days .Twenty four hours after the last treated ,peripheral blood was collected from the rabbits and serum samples were separated and were freezed until assayed .Plasma concentration of cholesterol ,triglyceride ,HDL,LDL and VLDL were determined by using spectrophotometer.

Result and Discussion

The result of statistics analysis showed no significant increase ($p>0.05$)in cholesterol concentration in treated group (61.0 ± 4.6) mg/dl as compared with control group (59.0 ± 3.0) mg/dl, also there was no significant increase ($p.0.05$)in HDL concentration in treated group(35.0 ± 6.0) mg /dl as compared with control group (28.7 ± 3.5) mg /dl ,see figures (1),(2) ,also was'nt found any significant increase ($p>0.05$) in LDL concentration in treated group (7.66 ± 4.9) mg /dl as compared with control group (3.5 ± 0.5) mg/dl, see figure (3) .From the a above result one can conclude that rifadin drug caused an increase in the level of cholesterol , HDL and LDL and that is due to rifadin wtich causes cholestasis ,cholestasis is a bile flow stagnations which may result from a failure in the secretary transport in the hepatocyte or in the ductular cells and that caused increase in the level of cholesterol (115) ,rifadin caused liver injury [12] ,[17] ,and toxicity to the liver [15] ,[8] liver represents the main site of the cholesterol and HDL synthesis and storage [2] .

It was found from that there was a relationship between the level of cholesterol and the level of HDL and LDL, and that is because HDL and LDL represent a very important role in the transportation of cholesterol in blood to the tissues from the liver [4].

The result showed a significant decreased ($p<0.05$) in triglycerides in treated group (93.6 ± 14.6) mg /dl as compared with control group (151.0 ± 34.5) mg/dl .Also it was found a significant decrease ($p<0.05$) in VLDL concentration in treated group (18.3 ± 3.2) mg/dl as compared with the control group (25.0 ± 2.0) mg/dl , see figures (4) ,(5) that result is because rifadin drug caused a decrease in the level of triglycerides [19], also from the above result it was found that there was a relationship between VLDL is concentration and triglycerides concentration because VLDL very rich with triglycerides and its level became in the same side of the triglycerides concentration that means when the level of triglycerides is decreased the level of VLDL decreased also in the blood [4],the plasma of triglycerides represent a biomarker for hepatotoxicity [19] because the liver represents the main site of the synthesis and storage of triglycerides [2] ,all that change in lipid profiles is due to the effect of rifadin drug in the liver [16] .

It was concluded that rifadin drug decreases the concentration of triglycerides and VLDL, and increases the concentration of cholesterol , LDL and HDL in the blood, that means rifadin drug dysfunction the lipids metabolism in the blood .

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Table (1):-Effect of rifadin drug(15mg/kg/day) on cholesterol, triglycerides, HDL, LDL and VLDL in testing and control groups.

Groups	Cholesterol mg/dl	Triglycerides mg/dl	HDL mg/dl	LDL mg/dl	VLDL mg/dl
Treated with rifadin (15mg/kg/day)	61.0±4.6	93.6±14.5	35.0±6.0	7.66±4.9	18.3±3.2
Control	59.0±3.0	151.0±34.5	28.7±3.5	3.5±0.5	25.0±2.0

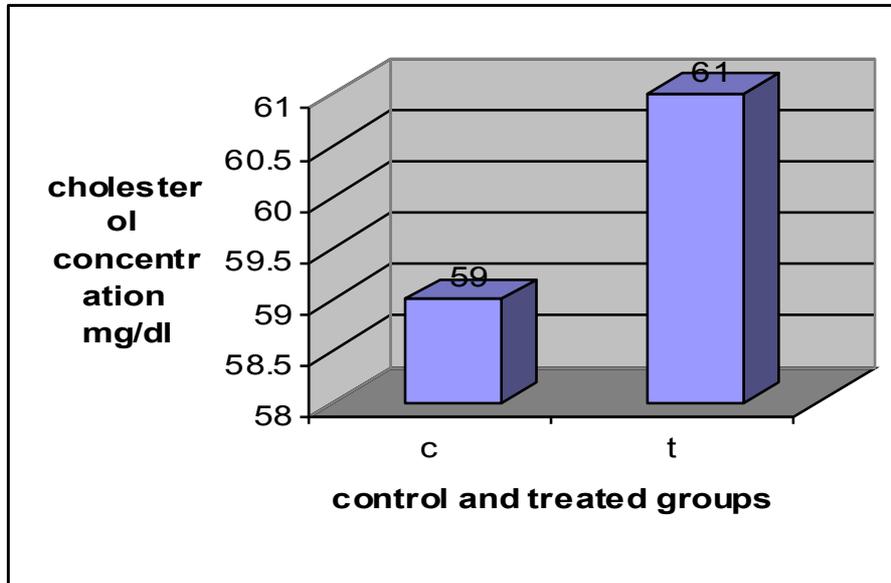


Fig.(1): Effect of rifadin(15/mg/kg/day) on cholesterol concentratio in treated and control groups.

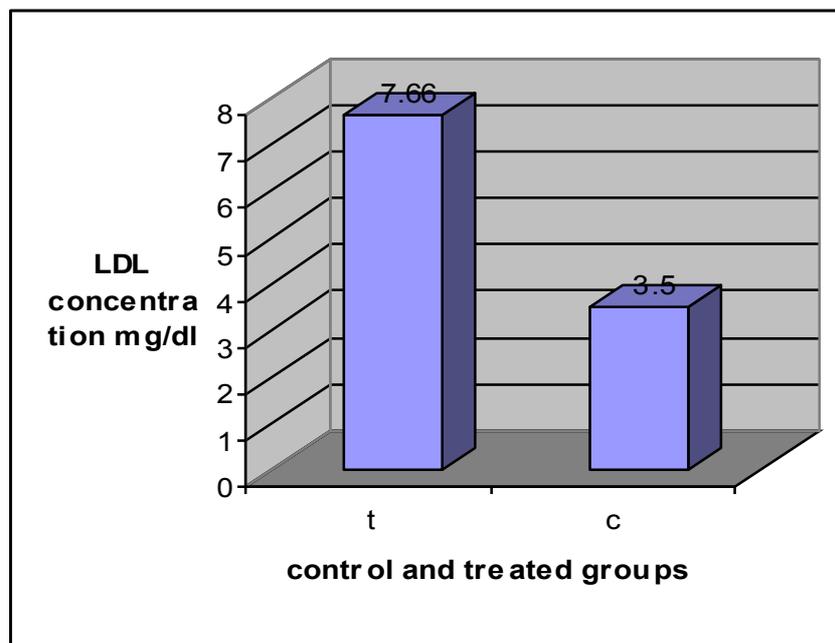


Fig. (2): Effect of rifadin(15mg/kg/day) on LDL concentration in treated and control groups.

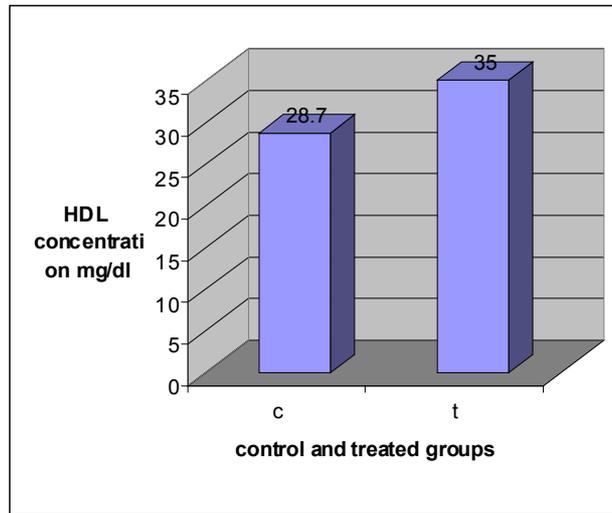


Fig.(3): Effect of rifadin(15mg/kg/day) on HDL concentration in treated and control groups

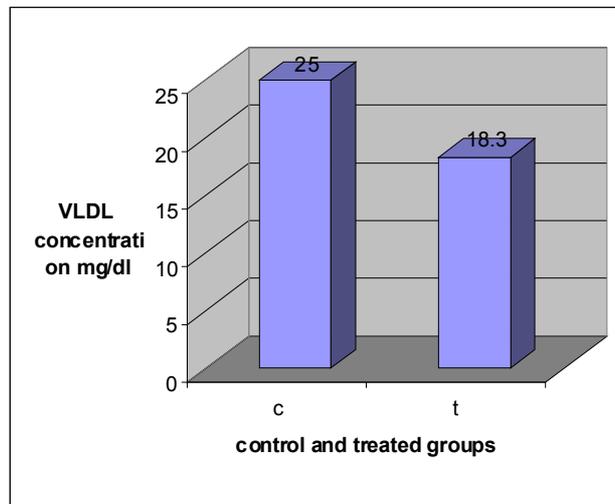


Fig. (4): Effect of rifadin(15mg/kg/day) on VLDL concentration in treated and control groups

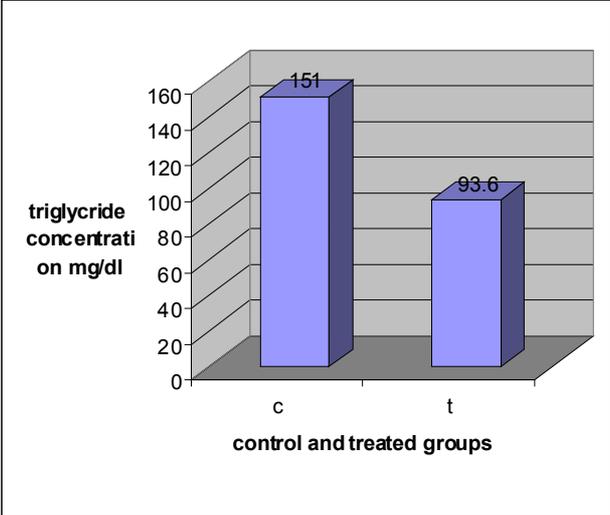


Fig. (5): Effect of rifadin(15mg/kg/day) on triglycerides concentration in treated and control groups

تأثير عقار الريفادين في أيض الدهون في الارانب

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الخلاصة

هدفت الدراسة الحالية دراسة تأثير عقار الريفادين في ايض الدهون في الارانب، اذ استخدمت ثمانية ارانب في هذه الدراسة ثم قسمت على مجموعتين المجموعة الاولى (مجموعة السيطرة) وتم تجريعها ب (15 ملغم /مل /يوم) محلولا فسيولوجيا ملحيا normal saline مدة 35 يوما، اما المجموعة الثانية (المجموعة المعاملة) فتم معاملتها بعقار الريفادين (كبسول 300 ملغم /كغم) وبجرعة (15 ملغم /كغم /يوم) مدة 35 يوما. شملت الدراسة تأثير عقار الريفادين في تركيز الكوليسترول والدهون الثلاثية، HDL، LDL و VLDL، وظهرت النتائج عدم حصول زيادة معنوية ($p > 0.05$) في تركيز كل من الكوليسترول وال LDL وال HDL في المجموعة المعاملة بالريفادين مقارنة مع مجموعة السيطرة، ففي حين اظهرت النتائج وجود نقصان معنوي ($p < 0.05$) في تركيز كل من الدهون الثلاثية وال VLDL في المجموعة المعاملة بالريفادين مقارنة مع مجموعة السيطرة.

يتضح من هذه الدراسة ان لعقار الريفادين تأثيرا سلبيا يؤدي الى حدوث اختلال ايض الدهون في الدم .

