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Study of lipid profile levels and liver's enzymes in serum patients infected with diabetes mellitus type 2 After 3 years from infected

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Abstract:

This research aims to the relation between long period of infection with diabetes mellitus type 2 and some drugs that cause decrease lipids in serum blood and measure liver's enzymes and study the relationship between formation stone in gallbladder and high level of cholesterol and triglyceride. the studied measurer levels of some Biochemical profile such as : (blood glucose , Glycosylate hemoglobin HbA1c , cholesterol, Triglyceride ,High density lipioprotein – cholesterol(HDL-C) ,low density lipioprotein-cholesterol(LDL-C), glutamic pyruvate transaminase enzyme(GPT),glutamic oxaloacetate transaminase enzyme(GOT), Alkaline phosphates enzyme)and measure of serum total protein ,Albumin , Globulin in patients infected with diabetes type2 before and after treatment for three years. Blood samples collected before and after three years infected and treated and the above mention parameters were measured as scheduled. This study contains (100) samples Diabetes patients un controlling glucose divided in to (50males , 50females) and 50 healthy person divided in (25 males ,25 females)from the same area no infected with diabetes mellitus depended as a control group . The patients infected with diabetic treated by daonil and Metra famine and lipids drugs(Gemfibrozl (lopid 600). High levels in lipids profile for three years caused to stone in gall bladder in female group more than male group due to may be to relation between the infection with diabetes mellitus and length period infection with high level of cholesterol and triglyceride . It is clear that treatment of diabetes by lipids drugs caused decreasing in blood level profile, also liver founded in good function and high enzyme level induce to high level of cholesterol but no dangerous or risk about it due to infected with diabetes after three years. Blood glucose continuous with high level but don't increase above before treatment that refers to patients not engagement with diet and sport exercises and the patients did not care about diabetes and complications.

Study of lipid profile levels and liver's enzymes in serum patients infected with diabetes mellitus type 2 After 3 years from infected

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Intoduction:

High level of lipids consider diabetes mellitus type 2 as a complex symptoms arise in blood glucose is only a small part of the diabetic healthy problems like heart disease ,kidney ,eyes or legs in spite of achieving normal blood glucose control with indigenous drugs over many years(WHO,1999) .High level of glucose causes some troubles Maintaining such as for example lose weight , increase lipids levels in the blood , high blood preasure and avoidance and other risk factors correlation with diabetes like smoking sedentary life style ,so must treating elevated glycemic levels to decrease diabetes complications(Peter ,*etal* ,2019). Diabetes causes many diabetics developing healthy problems. Also must be determination concentration of lipids (cholesterol, triglyceride .high – density lipoprotein cholesterol, low-density lipoprotein cholesterol) that is very important to knew healthy situation of patients (Americans Diabetes Association, 1995; Akram and Hisham,2015)

Further ,gradually diabetes symptoms greatly from time to time induce to High blood glucose level also the type of therapy treatment and another factors depended on life style or another relevant disease correlation(al-ashbal ,2004). table(1)showed types of therapy for type 2 diabetes .(Testa and Meyer ,1996; Nogrady,1988). .

Table (1) types of some drugs treated diabetes mellitus type 2

Therapeutic indections	Name of medicinal product	Groups of drugs
1-work on increase β-cell release insulin 2-good metabolism in muscle and lipids tissue,also decrease liver products glucose	1-Glibenclamide 2-Chloropropamide 3-Tolbutamide 4-Glipizide	First group Sulphonyl urea
1- Good metabolisem of glucose in muscles 2- decrease level productes of glucose in liver due to insulin action.	1-Methformine 2- Phenformine	Second group Biguanides
Treatment of sever hypertriglyceridaemia with out low HDL-cholesterol	Lopid 600	Gemfibrozil group

A1c is a measure of the mean blood glucose level over the previous 2-3 months and particularly the previous 4 weeks .It is improve the essential base line measure of glycemic control in a diabetes mellitus and must be determined at least annually in all diabetics and more often (3 – monthly) when the effect of changes in therapy or compliance Unlike fructose amine, heamoglobuline glycoselat A1c is unaffected by protein urea of obesity. However It may be decrease when there is shortend life of red blood cells surival as in haemolysis or bleeding (Ibrahim,et.al ,1987 ;al-ashbal ,2000;Cheng and Weiping,2018) .

Serum glutamic – pyruvic transaminase or GPT (alt) is an enzyme found primarily in the liver but also to aleser degree in , the heart and other tissues . It is useful indiagnosing liver function more than GOT (ast)levels . Decrease Gpt enzyme in compination with increased cholesterol levels in cases of a congested liver(Berg *et al* .,2002) .

(Abdel-Muneim and Al-Homrany (2002) reported increase levels in mononucleosis, alcoholism, liver damage, kidney infection , chemical pollutants or myocardial infection , and Diabetes. Cholelithiasis ,many studied reported high incidence of cholelithiasis in diabetic ,obsity and hyper lipidemia confounding variables . Fat accumulation in liver is once complication of glycemic a reported frequency of 40-70 %. Unfortunately and associated obesity is a frequently occurring confounding variable because hepatic fat not correlation with high level of glucose and associated with high level of cholesterol and triglyceride. Diabetes depended insulin is not correlated with fat accoumulation if glycemia level is well controlled ,but diabetes non-depended insulin may have a 70% correlation regardles of blood glucose control (Norum and Christain,1983). Lipid is store in the form of triglyceride and may be a manifestation of elevated lipid transport to liver and liver lipid fat synthesis , also low oxidation or transport of fat from the liver . The steatosis cause of microvesicular infection or macrovesicular diseases and may lead to fibrosis and cirrhosis (Pusztai ,et.al ,1998) .

Many articles have recognized a two- three fold high degree incidence of gallstones in diabetic patients , whereas other not founded evidence to demonstrate a significant correlation . Gallbladder emptying abnormalities occur in diabetic patients and patients cholelithiasis (Cooper ,et.al,1991 ; Ransohoff et.al ,1987).Release of lithogenic bile by the liver in patients with diabetes non –depend insulin may be indicator to forming gall stone treatment Therapy by the biguanide metformine (Glucophage) did not under

go hepatic metabolism and like chlroproamide. (Thaler and Schaffiner ,1986 ; Ruiz-mlina et .al, 1997).
(Diabinese drug) is stability form and execreted in urine (Testa and mayer,1996). Furthely therapy for fat like (Genfibrozil) may be cause gallstone (Davidson ,1992 ; Nogrady ,1988)

Material and Methods:

This study is researched in National diabetic center / al-mustansiriyah university /ministry of higher education of Iraq ,patients from Baghdad city .
Diabetes diagnosed in the diabetes center . Samples collected first time before treatment and second time after 3 years treatment. Analysis examine included different articles at first time such as (blood glucose ,cholesterol ,triglyceride ,HDL-C, LDL-C ,HbA1c , ,liver enzymes , ,.Second time blood collected analysis examine include (blood glucose ,cholesterol ,triglyceride ,HDL-C, LDL-C ,HbA1c , ,liver enzymes ,albumin ,globulin and total protein).
ultrasound used to diagnoses gallbladder stone.
Drugs Daonil tablet for diabetes oral take and methformin(Glucophage)one tablet three time in aday.
lopid 600(Gemfibrozl) for cholesterol and triglyceride treatment one time in aday one month . (last month befor take samlples).

Collection of blood and tests of parameters

This study includes on 100 diabetes patients uncontrolling glucose detected on the diabetic center (50males, 50females) and 50 healthy people (25 males, 25 females) from the same area with no history of diabetes mellitus as acontrol group. Blood samples take in fasting pateints divided into two tubes (2 ml EDTA and 3 ml plane tube). .
The parameters include:
1- Determination of blood glucose level.
Serum blood glucose was estimated by an enzymatic analysis method by(Barham and Tinder (1972)) , using Giess kit reagents and products (Italy). The principle of method was described in bulletin paper with kit.
2- Determination of serum cholesterol level.
Serum cholesterol level was estimated by an enzymatic analysis method by (Young ,D.S.*etal*.,1975) , using Giess kit reagents and products (Italy). The principle of method was described by bulletin paper with kit.

3- Determination of serum triglyceride level
Serum triglyceride level was estimated by an enzymatic analysis method by(Young ,D.S.*etal*.,1975) , using Giess kit reagents and products (Italy). The principle of method was described by bulletin paper with kit .
4- Determination of serum HDL-C (High Density lipoprotein – cholesterol).
Serum HDL-C level was estimated by an enzymatic analysis method by (Demacherp,N.M.1980) , using Giess kit reagents and products (Italy). The principle of method was described by bulletin paper with kit .
5- Determination of serum LDL-C (Low Density lipoprotein – cholesterol).
Serum LDL-C level was estimated by(Demacherp,N.M.1980) used mathamtics value LDL-C = chol. – (HDL-C + Triglyceride)/5
6- Dtermenation of serum liver enzyme (GOT,GPT) .
Serum(GOT,GPT) . level was estimated by colore method by(Ritman-Frankel, 1957)evoluted by enzymatic method using Giess kit reagents and products (Italy). The principle of method was described by bulletin paper with kit .
7- serum,Alkphosphatase(Alk) follow kinetic method by Young,D.N.*eta*.,(1975). using Giess kit reagents and products (Italy).
8- Measurment of glycosylated haemoglobins (HbA1c).
Determenation of (HbA1c) in the haemolysate was carried out colorimetrically using system Bio RAD , haemolysis reagent Bio- RAD ,the results analysis automatic in the monitor of system and printing wih prenter correlted with monitor .
9- Dignostics of gallbladder stone.
Stones diagnostic by wave of Ultrasound wave (sonar)examine in the national diabetes center before breakfast and don't take lipid food for three days before sonar.

Statistical analysis :

All the medical data results were analyzed statistically using (Statistical Pakage of Social Science) SPSSII – t – test for paired data Of different level of significance and percentage ratio . all the results were expressed as mean ± S.E.M. (ANOVA) One way analysis of Variances. Also founded percentage ratio(%) for all articles to obtaind the change between results before and after treatment and long period of infection .
(البياتي واثناسيوس ،1977)

Results and discussion :

The results of blood glucose showed in tables (2)refer to male infected group before treatment showed high level in parameters :blood glucose and

HbA1c (192.16 ± 42.95 mg/dl) ,HbA1c(9.34 ± 2.34 %) comparing with male control (non – infected with diabetes was :(99.68 ± 11.02mg/dl , 4.40 ± 1.44 %) , Also the results in female infected group remarkable increased befor treatment in levels of blood glucose and HbA1c (209.46 ± 64.15 mg/dl) (9.60 ± 2.15 %) the data obtaind shows significant changes $p<0.01$,$p<0.05$ between infected male group and control male groups and female group and control female group Agree with (Al- Yassin and Ibrahim ,1981) .

The results of lipid profile before treatment in male and female infected group showed in tables (3). Also pointed high level in lipid profile before treatment in male infected group (chol ., trichol ., ldl-c) chol.(222.00 ± 20.46 mg/dl) ,trichol. (209.84 ± 58.83 mg/dl) , LDL-c (145.80 ± 36.40 mg/dl) and low level inHDL-C (40.22 ± 8.06 mg/dl), comparing with male control 181.60 ± 6.82 mg/dl , 101.60± 10.79 mg/dl , 101.16 ± 12.70mg/dl 50.72 ± 3.50 mg/dl respectively) .The result of lipid profile for female infected group befor treatment to make clear increase in , chol.(203.16 ± 24.05 mg/dl) ,trichol. (207.50 ± 39.04 mg/dl , , LDL-c (90.50 ± 12.70 mg/dl) HDL-C (53.16 ± 4.13 mg/dl) and low level in HDL-C (42.52 ± 8.65 mg/dl) comparing with female control group(non – infected with diabetes : chol.(167.00 ± 6.36 mg/dl) ,trichol. (93.84 ± 9.50 mg/dl) , LDL-c (90.50 ± 12.70 mg/dl) HDL-C (53.16 ± 4.13 mg/dl (this results agree with (Goodman and Gilman ,1985) .

Table (2)Blood glucose level in serum blood in experimental groups (mg/dl)and glycosylated Heamoglobulin HbA1c (%) in patients before treatment

Type of analysis / groups	HbA1c %	Blood glucose mg/dl
Male control negative	4.40 ▲ ± 1.44	99.68 ▲ ± 11.02
Male infected diabetes 2	9.34 ± 2.34	192.16 ● ± 42.95
Female control negative	4.24 ■ ± 1.28	84.68 ■ ± 6.84

Female infected diabetes 2	9.60 ± 2.15	209.46 ± 64.15

Signeficante p< 0.01 ,p<0.05 diffrence between male control group and male and female infected groups ▲

Signeficante p< 0.01 ,p<0.05diffrence between female control group and male and female infected group ■

● Signeficante p< 0.01 ,p<0.05 diffrence between male and female infected group

Table (3)levels of serum lipids profile (cholesterol ,triglyseride ,HDL-C ,LDL-C)befor treatment

Type of analysis / Groups	LDL-C mgl/dl	HDL-C mg/dl	tricholesterol mg/dl	Cholesterol mg/dl
Male control negative	101.16 ▲ ± 12.70	50.72▲ ± 3.50	101.60▲ ± 10.79	181.60▲ ± 6.82
Male infected diabetes 2	145.80 ± 36.40	40.22 ± 8.06	209.84 ± 58.83	222.00 ± 20.46
Female control negative	90.50■ ± 12.70	53.16 ■ ± 4.13	93.84■ ± 9.50	167.00■ ± 6.30
Female infected diabetes 2	145.80 ± 31.40	42.52 ± 8.65	207.50 ± 39.04	203.16 ± 24.05

Signeficante p< 0.01 ,p<0.05 diffrence between male control group and male and female infected group ▲

Signeficante p< 0.01 ,p<0.05 diffrence between female control group and male and female infected group ■

Signeficante p< 0.01 ,p<0.05 diffrence between male and female infected group ●

The changes in blood glucose and HbA1c levels after treatment showed in tables (4)and figures(1,2) in both infected groups (male and female) showed different from male to female in different parameters .The results of blood glucose and HbA1c in male infected group was (171.00±43.53 mg/dl ,8.88 ± 0.94%) the ratio decrease (11 %, 4%)respectively .And the resulte of female infected group blood glucose and HbA1c remarkable (188.32± 44.73 mg/dl , 9.68 %) the ratio decrease (10 % , 0 %) respectively . The data obtained from this study demonstrate that the drug Genfibrozil and daonil and metrafamine adose –dependent reduction in the glycemia level cause significant changes and produce avaluable decrease in the blood glucose level in both males and females groups agree with Zilva and Pannall ,1985 . Haemoglobin A1c ,a glycosylated fraction of Hb A, was avilable to increase in pateints with diabetes mellitus , and the amount of this fraction is directly proportional to fasting blood glucose ((Howerd et.al.,2004 ; Faruk and Jinan ,2016). The published reports also revealed that the level of Hb A1c correlate best with the degree diabetic control obtaind several months earlier . This result would be expected because of the 120 days life span of the red blood cells and because the glycosylation reaction is irreversible . There seems to be little doubt that levels of glycosylated determent of overall diabetic control . It is valuable in assessing control , both in diabetic population and in individual patients (American diabetes Association ,1995 ; Al- Yassin and Ibrahim ,1981;Olvera-Montaon *etal* , 2019).

Table (4) Blood glucose levels in serum blood in experimental groups (mg/dl)and glycosylated Heamoglobulin HbA1c(%) in pateints after treatment

Type of analysis / Groups	HbA1c %	Blood glucose mg/dl
Male control negative	4.80 ▲ ± 0.77	99.68 ▲ ± 11.03
Male infected diabetes 2	8.88 ± 0.94	171.00 ● ± 43.53
Female control negative	4.32 ■ ±	84.68 ■ ±

	0.88	6.84
Female infected diabetes 2	9.68 ± 1.40	188.32 ± 44.73

Signeficante p< 0.01 ,p<0.05diffrence between male control group and male and female infected group ▲

Signeficante p< 0.01 ,p<0.05diffrence between female control group and male and female infected group ■

Signeficante p< 0.01 ,p<0.05diffrence between male and female infected group ●

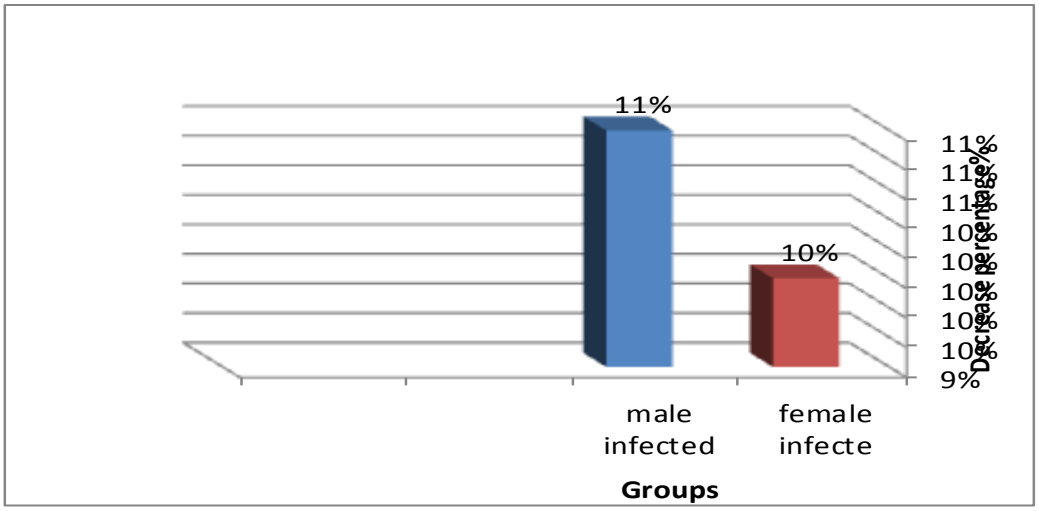

Figure (1)decrease percentage ratio of glucose in male and female infected groups after 3 years treatment

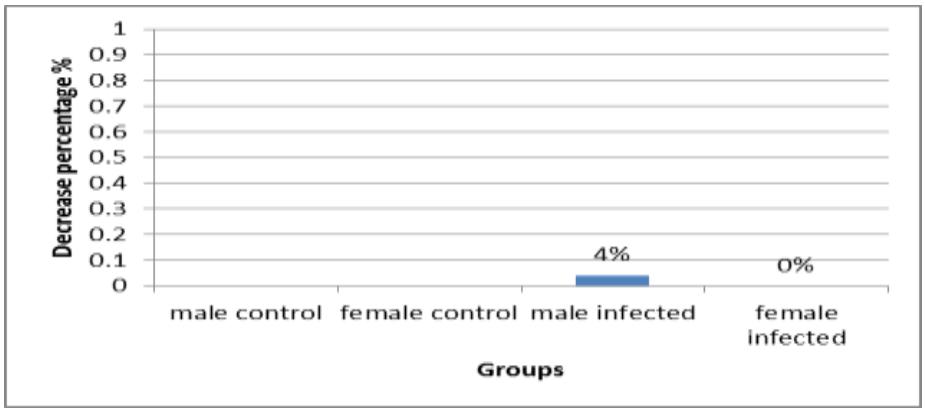

Figure (2)decrease percentage ratio of HbA1C in male and female infected groups after treatment

The results of lipid profile before treatment in male and female infected group showed in tables (5) and figures(3,4,5,6) cholesterol level in male infected group (173.26 ± 25.05 mg/dl) the ratio decrease (22 %) , in female infected group (201.48 ± 35.75 mg/dl) the ratio decrease (1%) , tricholesterol level in male infected group (148.48 ± 21 .07 mg/dl) the ratio decrease (29%) , in female infected group (141.18± 20.92 mg/dl) the ratio decrease 32 %, HDL-C level in male infected group (45.18 ± 4.53)the ratio increase (12 %) in female infected group (43.68 ± 6.57 mg/dl) the ratio increase (2 %),LDL-C level in male infected group (100.66± 13.61mg/dl) the ratio decrease (31 %) , in female infected group (116.32 ± 20.03 mg/dl) the ratio decrease(14%), comparing with male control group (99.68± 11.03 mg/dl ,4.80 ± 0.77% , 181.60 ± 6.74 mg/dl, 102.20 ± 10.77 mg/dl , 50.52 ± 4.02 mg/dl , 95.72 ± 10.59 mg/dl , respectively) and female control group (84.68± 6.84, 4.32 ± 0.88% , 167.00± 6.48mg/dl, 95.44± 10.40 mg/dl , 51.36± 4.58mg/dl, 93.72± 12.20 mg/dl respectively) . Also,it was founded significante difference in $p<0.01$,$p<0.05$ between infected male group and control groups and infected female group and control group. Serum cholesterol ,trigleceride ,ldl-c levels increase in diabetes mellitus ,and such increase represent the risk factor for coronary heart disease (Peter,et.al.,2005; C0nway ,et.al.,2004). Decreasing of serum fat concentration through dietary or drugs therapy like to be associated with lowering of the risk of heart disease (Ganong ,1997 ;Chase *etal* ,2019).The abnormal increase concentration of serum lipids in diabetes patients is due , minaly , to the increase in the mobilization of free fatty acids from the peripheral lipids stores ,since insulin inhibits the hormone – sensitive lipase . On the other hand , glucagon ,catecolaminase , and other hormones enhance lipolysis . The marked hyperlipemia that characterizes the diabetic state may be

regarded as aconsequence of the uninhibited effect of lipolytic hormones on the fat stores (Goodman and Gilman ,1985) . Cholesterol synthesis is also increase in ldl-c , and if insulin deficiency is very severe , chylomicrons may accumulate in the blood (Zilva and pannall ,1985; Chase *etal* ,2019). The results of this studied to ability of lipid drugs like Genfibrozil and daonil and methformine for diabetes treatment lead to no hypoliposis eficiency in infected groups latter findings shows that acontinuous administration of the drugs prevent of the level of serum lipids secondary to diabetes mellitus state . The hypoliposis effect of lipid drug can be explained as a direct result for the reduction in the blood glucose concentration(Zilva and pannall ,1985;Raghad *etal* 2019. .

Table (5)levels of serum lipids profile (cholesterol ,triglyceride ,HDL-C ,LDL-C)in pateints groups After treatment

Type of analysis / Groups	LDL-C mgl/dl	HDL-C mg/dl	tricholesterol mg/dl	cholesterol mg/dl
Male control negative	95.72 ▲ ± 10.59	50.52▲ ± 4.02	142.20▲ ± 10.77	181.60▲ ± 6.74
Male infected diabetes 2	1oo.66 ± 13.61	45.18 ± 4.53	148.48 ± 21.07	173.26 ± 25.05
Female control negative	93.72■ ± 12.20	51.36■ ± 4.58	95.44■ ± 10.40	167.00■ ± 6.48
Female infected diabetes 2	116.32 ± 20.03	43.68 ± 6.57	141.18 ± 20.92	201.48 35.76

Signeficante p< 0.01 ,p<0.05 diffrence between male control group and male and female infected groups ▲

Signeficante p< 0.01 ,p<0.05diffrence between female control group and male and female infected groups ■

Signeficante p< 0.01 ,p<0.05 diffrence between male and female infected groups ●

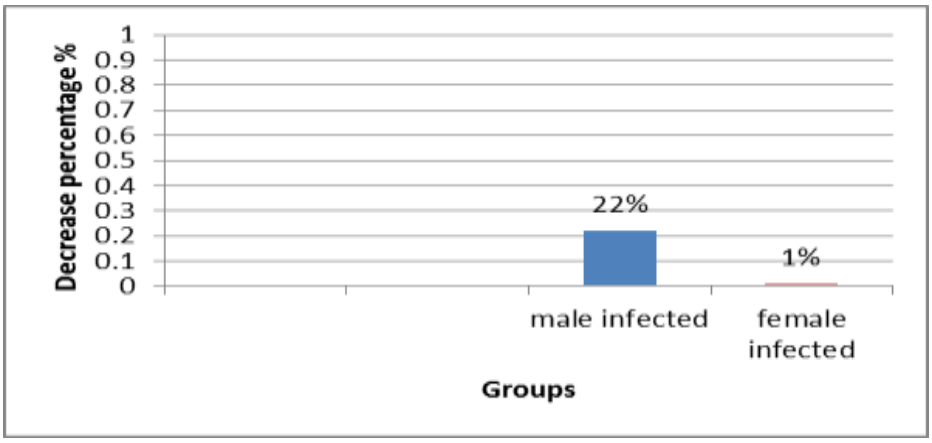

Figure (3)decrease percentage ratio of cholesterol in male and female infected groups after 3 years treatment

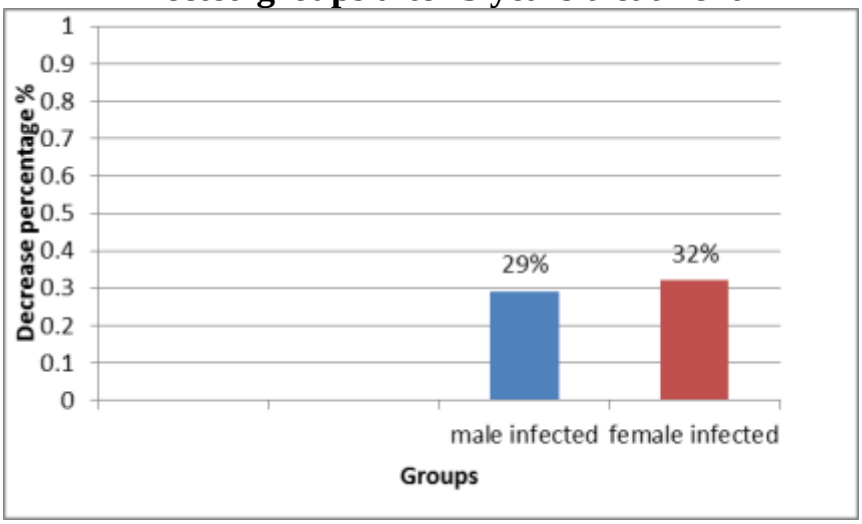

Figure (4)decrease percentage ratio of triglyceride in male and female infected groups after 3 years treatment

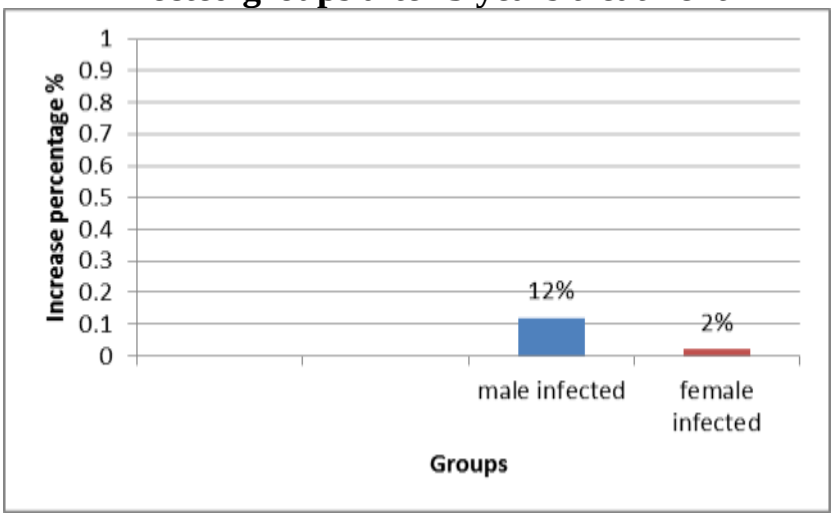

Figure (5)increase percentage ratio of HDL-C in male and female infected groups after 3 years treatment

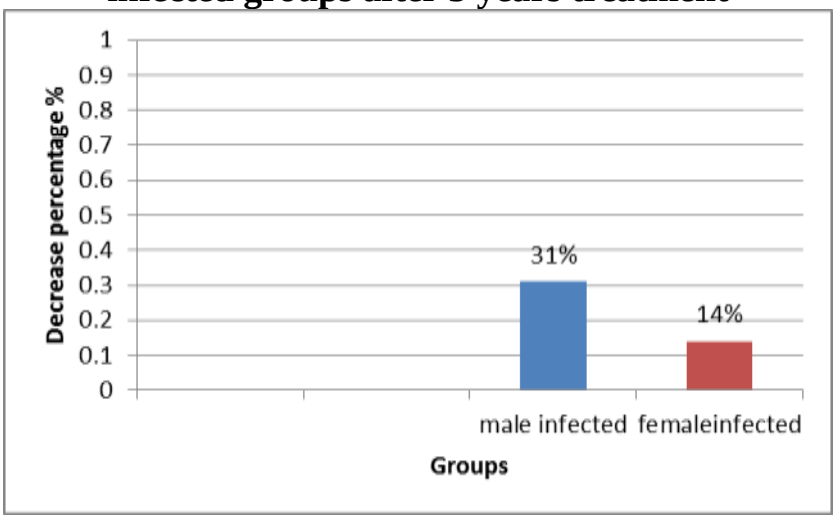

Figure (6)decrease percentage ratio of LDL-C in male and female infected groups after 3 years treatment

Also we founded stone formation in gallbladder appear after three years treatment in some patients ,that's due to due to high level of cholesterol and the women infected have higher ability to formation stone gallbladder than men ,due to high levels of cholesterol and triglyceride in serum blood of women than men due to high level of glucose and may be because take the Gemfibrozil (lopid) which use to decrease triglyceride and cholesterol ,instruction paper of drug refer to: one side effect of this drug (stone formation in gallbladder if usage for many years especily when sports and daite field with decrease level of sugar or lipids in blood infected with diabetes 2 (berg,2003). .

The result of total serum protein, Albumin and globulin shown in table (6)and figures (7,8,9) after treatment recored decreasing in male infected group (6.64± 1.41 gm/dl, 4.10± 0.82 gm/dl, 2.64± 0.66 gm/dl respectively) the ratio decrease (16 %, 8 % , 13%, respectively) comparing with male control group (7.92 ± 2.28gm/dl, 4.44± 1.34 gm/dl, 3.04± 0.89gm/dl respectively) .We showed a little decreasing in female infected group in total protein , Albumin and globulin levels (6.48± 1.41 gm/dl , 3.94 ± 0.84 gm/dl , 2.76± 0.63 gm/dl , respectively) the ratio decrease(14 % ,11 %, 5 % , respectively comparing with female control group (7.52± 2.05 gm/dl ,4.44 ± 1.16 gm/dl ,2.92 ± 0.89 respectively) the data founded no significante changes between groups ,This results refers to liver function in good situation because the ratio of protein synthesis (albumuin ,globulin, fibrenogen) low

effect only in albumine due to long infection with diabetes or druges the result agree with (Murry, et al.(2000) .

Table (6) liver enzymes levels in serum blood and total serum protein ,albumin, globulin Of experimental groups after recovery in diabetic center

Type of analysis / Groups	**Globulin**	**albumin**	**total protein**	ALK IU/l	GOT IU/l	GPT IU/l
Male control negative	3.04 ▲ ± 0.89	4.44▲ ± 1.34	7.92▲ ± 2.28	7.04▲ ± 2.05	24.28▲ ± 7.32	17.88▲ ± 5.12
Male infected diabetes 2	2.64 ± 0.66	4.10 ± 0.82	6.64 ± 1.41	9.04 ± 2.23	25.96 ± 5.21	18.60● ± 3.68
Female control negative	2.92■ ± 0.89	4.44■ ± 1.16	7.52■ ± 2.05	6.56■ ± 2.05	24.52■ ± 7.32	18.24■ ± 5.40
Female infected diabetes 2	2.76 ± 0.63	3.94 ± 0.82	6.48 ± 1.41	9.40 ± 2.43	24.44 ± 5.17	20.06 ± 5.43

Signeficante p< 0.01 ,p<0.05 diffrence between male control group and male and female infected group ▲

Signeficante p< 0.01 ,p<0.05diffrence between female control group and male and female infected group ■

Signeficante p< 0.01 ,p<0.05 diffrence between male and female infected group ●

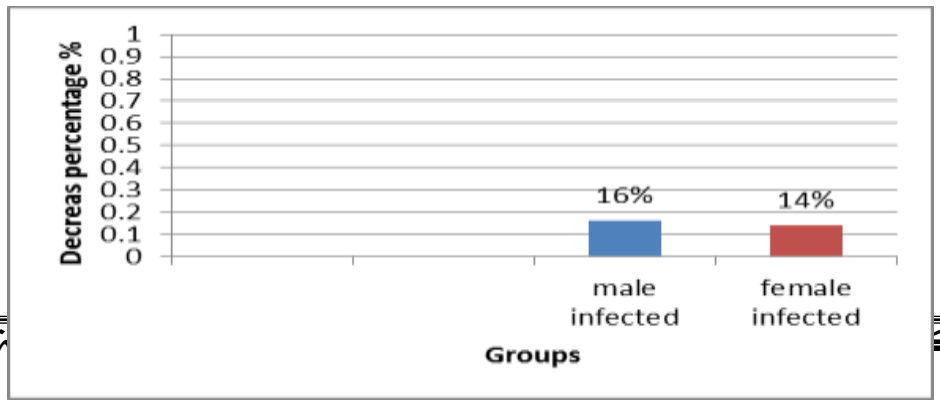

Figure (7)decrease percentage ratio of total serum protein in male and female infected groups groups after 3 years treatment

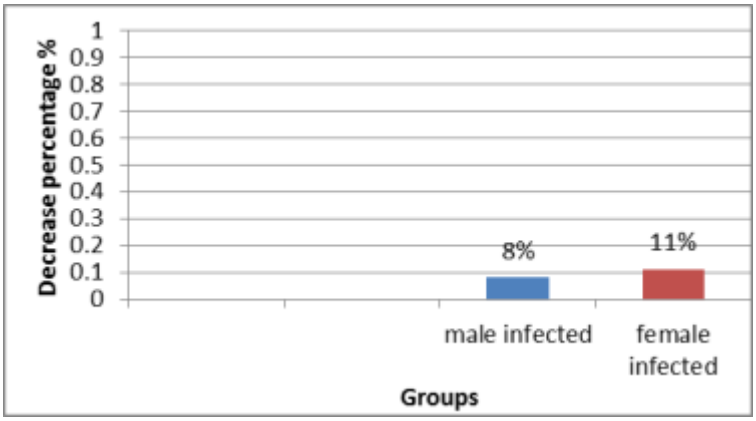

Figure (8)decrease percentage ratio of serum albumin in male and female infected groups after 3 years treatment

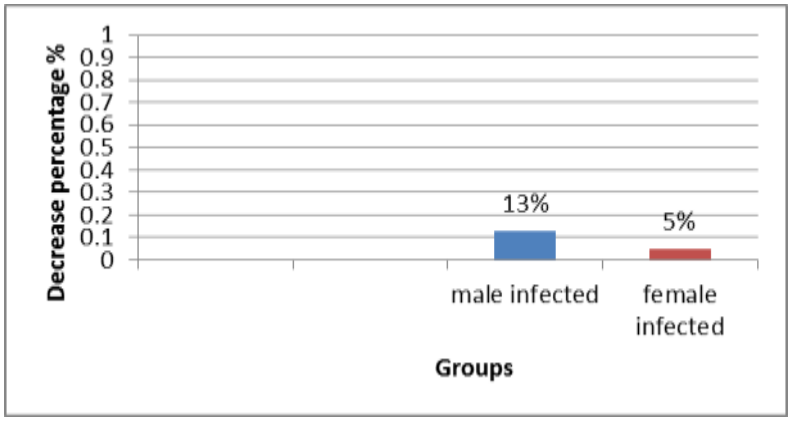

Figure (9)decrease percentage ratio of globulin in male and female infected groups after 3 years treatment

The reading of liver' s enzymes (GPT ,GOT ,ALK) after treatment as shown in table(6)and figures (10,11,12) in male infected group was (18.60± 3.68 gm/dl ,25.96 ± 5.21 I.U/L , 9.04± 2.23 I.U/L respectively) the ratio increase (4 % ,7%,28%,respectively) comparing with male controle (17.88± 5.12 I.U/L l ± 24.28 ± 7.32 I.U/L , 7.04± 2.05 I.U/L, respectively). Also showed high levels in liver' s enzymes (GPT ,GOT ,ALK) in female infected group (20.06 ± 5.43 I.U/L , 24.44 ± 5.17I.U/L , 9.40± 2.43 I.U/L ,respectively) the ratio increase 10 % ,1% ,43% comparing with female control group (18.24± 5.40 I.U/l , 24.52 ± 7.32I.U/, 6.56± 2.05 I.U/L respectively) Garber and Karlsson 2001). the data detected a significant difference between

infected groups and control groups. Significantly increased levels of ALT(SGPT) often suggest the correlation of other health problems such as high level of cholesterol and triglyceride due to diabetes mellitus infected with no controlling glucose or lipids , heart diseas, hepatic disease ,bile duct problems or myopathy , therfor Alt depended as indector for heart and liver action . High level of ALT enzyme enhanced by dietary choline deficiency. Also high levels of ALT enzyme cause mean that healthy problems exist , oscillating of Alt level is normal throw the day ,and they can also increased due to strenuous physical exercise (Paul and Giboney ,2005).Diffrents levels between high and low ALT levels enzyme rfer to some medical problems are found in the blood , for example , eleveted ALT(GPT) levels due to hepatocyte damage can be distinguished from bile duct problems by dmeasuring alkaline phosphatase , Also ,myopathy –related elevated in ALT must be suspected when the aspartate transaminase GOT (AST) is greater than ALT ; the possibility of muscle disease creating kinase .Many drugs elevated GPT levels, including Zileuton , Omega -3- acid ethyl easters (Lovaza), (Ghouri,et.al.,2010),Also Gemfibrozil(lopid) causes high liver enzymes especialy Alk phosphatase.The result agree with berg,2003) and Bellosta *etal* (2004). Some anti –inflammatory drugs like antibiotics or cholesterol medications , some antipsychotics ,anticonvulsants and paracetamol cause elevated Alt levels (Watkins ,et.al.(2006)).

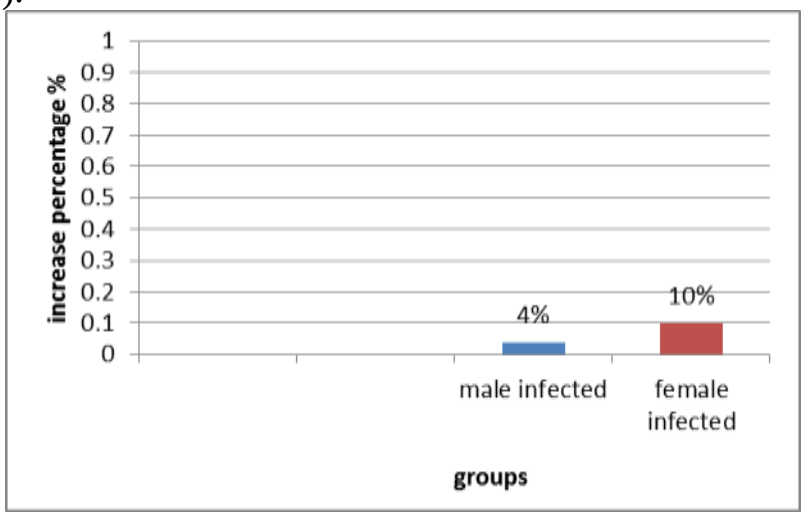

Figure (10)increase percentage ratio of liver enzyme GPT in male and female infected groups after 3 years treatment

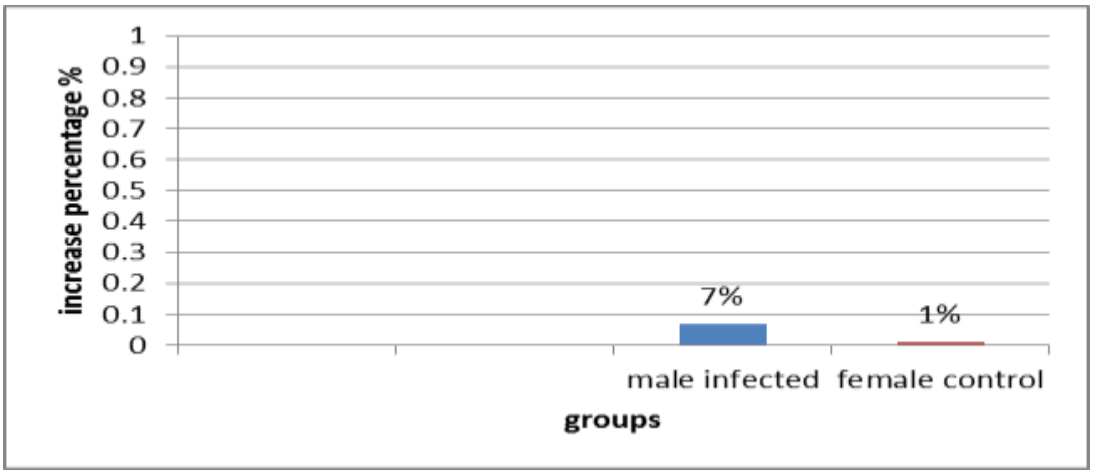

Figure (11)increase percentage ratio of liver enzyme GPT in male and female infected groups after 3 years treatment

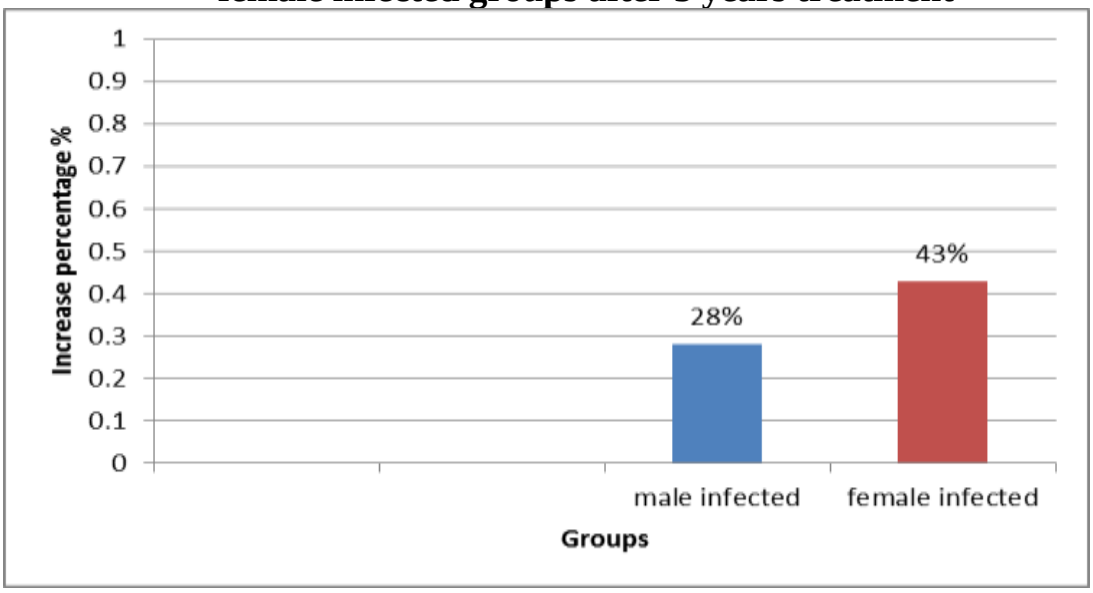

Figure (12)increase percentage ratio of liver enzymeALK phosphatase in male and female infected groups after 3 years treatment

In conclusion the study founded several lipid abnormalities in type II DM patients and has pointed to the significance of diabetic control in control of lipid abnormalities in the diabetic patients .These may involve dietary intervention ,increase in physical exercise ,control of blood pressure , avoidance of smoking ,and control of overweight and obesity .Also results to no high change of patients situation refer to did not become better than before treatment special in women group wherever blood concentration still high more than men group then the doctor advice to take insulin injection alternative oral drugs because afraid from diabetic secondary complication

also some oral drugs gave toxicity if it use for long period . the Iraqi population in general and diabetic patients ,as well as high –risk groups ,in particular may be due to don't care about healthy or have no realy knew about complication of diabetes .That means must be the knowledge about diabetes disease to progress with healthy future generation of young Iraqis.

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Study of lipid profile levels and liver's enzymes in serum patients infected with diabetes mellitus type 2 After 3 years from infected

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دراسة لمستويات الدهون وانزيمات الكبد في مصل المصابين بالاصابة بالسكري من النوع الثاني بعد 3 سنوات

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الخلاصة:

تهدف الدراسة لمعرفة العلاقة بين طول فترة الاصابة بالسكري النوع الثاني وبعض الادوية المخفضة للدهون مع قياس انزيمات الكبد والبروتينات والعلاقة بين تكون حصى المرارة والمستويات العالية من الدهون خاصة الكولسترول والدهون الثلاثية تم قياس بعض الفحوصات الكيموحيوية مثل :(مستويات السكر والسكر التراكمي HbA1c وتحليل الدهون الكامل او صورة الدهون في مصل الدم وتشمل على (الكولسترول ، والكولسترول الثلاثي ، البروتين الدهني عالي الكثافة HDL-c ، البروتين الدهني واطئ الكثافة LDL-c)في المرضى المصابين بالسكري نوع 2 بعد ثلاث سنوات من الاصابة . جمعت عينات الدم قبل وبعد ثلاث سنوات. تم اختيار 100 عينة مصابة بالسكري (50 عينة اناث و50 عينة ذكور) والذين استمرت بالارتفاع نسبة السكر في دمهم خلال 3 سنوات. ومجموعة السيطرة 50 عينة قسمت الى (25 عينة اناث ،25 عينة ذكور). تم استعمال الادوية المتمثلة بال (Daonil , metformin)الخاصة بالسكري والخافضة للدهون ومضادات اكسدة الدهون Antioxidants cholestyramine مثل Gemfibrozil(, lopid 600 mg) لعلاج المرضى المصابين بالسكري.

بينت النتائج انخفاض نسبة السكر والدهون في مجموعة الذكور مقارنة بمجموعة الاناث كما وجدت ارتفاع انزيمات الكبد خاصة Alk phosphatase في كل من الاناث والذكور المصابين بالسكري مع تغير بسيط في مستويات الالبومين والكلوبيولين والبروتين الكلي ، اذ لم تلاحظ فروق معنوية بعد الاصابة مما يشير الى سلامة الكبد خلال هذه المدة . اما بالنسبة للدهون فقد انخفضت في مجموعة الذكور المصابين بصورة اعلى مما عليه في الاناث كما لوحظ تكون حصى المرارة نتيجة لارتفاع مستويات الدهون خصوصا الثلاثية منها حيث تتفاعل مع املاح وتم تشخيصها باستعمال جهاز فوق الموجات الصوتية sonarالجهاز المناسب لتشخيص حصوات المرارة ذلك لان بعض حصوات المرارة قد لا تظهر بأشعة اكس العادية في المرارةووجد ان هناك علاقة بين مدة الاصابة بالسكري وطول فترة العلاج وبعض العقاقير الخافضة للدهون وتكون حصى المرارة ولوحظ ان نسبة الاناث اعلى من الذكور في تكون هذا النوع من الحصى للارتفاع المستمر بالكولسترول والدهون الثلاثية.كما بينت النتائج انخفاض بسيط في مستويات السكر والسكر التراكمي. اشارالبحث الى ان المرض لايمكن الشفاء منه ولم يتم تطور الحالات الى اسوء مع خطر التعرض الى مضاعفات السكري خلال وقت قصير .