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APPRIVIATIONS

ACC	**Acetyl CoA carboxylase**
ALT	**Alanine amino transferase**
AMP	**Adenosine monophosphate**
ANOVA	**Analysis of variance**
apoB	**apolipoprotein B**
AST	**Aspartate amino transaminase**
ATP	**Adenosine triphosphate**
DAG	**Diacylglycerol**
ER	**Endoplasmic reticulum**
FAS	**fatty acid synthase**
FFA	**Free fatty acid**
G-6-PD	**glucose-6-phosphate dehydrogenase**
GLUT 4	**Glucose transported protein 4**
GLUT 5	**Glucose transported protein 5**
GSH	**Reduced glutathione**
H_20_2	**Hydrogen peroxide**
HCC	**Hepatocellular carcinoma**
HDL	**High density lipoprotein**
H&E	**Hematoxyline and eosin stain**
HMP-Shunt	**Hexose monophosphate shunt**
HSCs	**Hepatic stellate cells**
KCs	**Kupffer cells**
IL	**Interlukine**
ICAM-1	**Intercellular adhesion molecule 1**
IR	**Insulin resistance**
IRS	**Insulin resistance syndrome**
LDL	**Low density lipoprotein**
LPL	**Lipoprotein lipase**
MDA	**Malonyldialdehyde**
NEFA	**Non-esterified fatty acid**

NF	**Necular factor**
NO	**Nitric oxide**
PDH	**Pyruvate dehydrogenase**
PKC	**protein kinase C**
rpm	**Revolution per minute**
ROS	**Reactive oxygen species**
SCD-1	**stearoyl CoA destaturase-1**
TAG	**Triacylglycerols**
TNF-α	**Tumor necrosis factor-alpha**
VLDL	**Very low density lipoprotein**

6. SUMMARY

Nonalcoholic fatty liver disease is emerging as a common medical problem. It is usually associated with one or more of these conditions which are insulin resistance, type 2 diabetes, dyslipidemia and obesity. Recently they collectively termed as the metabolic syndrome. It is generally accepted that high fat diets can be used to generate a valid rodent model for NAFLD.

The present study aimed to experimental induction of NAFLD by using of high fructose in water (15%) in male Albino rats and to evaluate the biochemical and hormonal changes that occur in plasma and tissue which related to charbohydrate and lipid metabolism.

In addition, an attempt was made to clarify the role of some new probiotics represented by Lactobacilli as a supportive treatment of NAFLD.

The experiment was carried out on male Albino rats for a period of 13 weeks. Rats were divided into four main groups (C, F, FL and L groups) according to the type of the consumed drinking water. Control group fed with the normal tap drinking water, F group fed with tap drinking water with high fructose, FL group fed with tap water with high fructose and lactobacilli and finally L group fed with tap water with lactobacilli.

The effect of added fructose and treatment on body weight of rats was determined.

The effect of added fructose and treatment on serum glucose, insulin, HOMA-IR index, TAG, TC, LDL-TC, HDL-TC, ALT, AST, AST/ALT ratio and albumin were studied. In addition, MDA, NO, GSH and TNFα were measured in liver homogenate. Histopathological examination of liver tissue is carried out.

Results recorded in (7) tables (12) figures have been obtained statistical data and analysis showed the following:

1) Add fructose to drinking water to Albino rats for 13 weeks showed an increase in body weight of rats in all groups of rats compared to C group and also the treated groups showed a significant increase in body weight compared to F group.

2) A significant increase in the level of serum glucose in F and FL group compared to control group but serum insulin level stayed within normal level in the fasting state as well as insulin resistance in all groups of rats except (F) group which showed a moderate insulin resistance.

3) A significant increase in the concentrations of triglycerides and when there is not significant changes in total cholesterol there was a significant increase in total cholesterol of lipoproteins, low-density and very low-density, but high-density showed no changing and that in the second group (F) compared to the control group and the third group (FL) showed significant decrease in the level of triglycerides and cholesterol lipoproteins, low-density and very low-density, compared to the F group.

4) There were no significant changes in the activity of the enzyme ALT and AST as well as the ratio of AST to ALT in groups, as well as the level of albumin in serum did not indicate any significant change in all groups.

5) A significant increase in the level of nitric oxide in the three groups compared to the control group, whereas the level LPO showed a significant increase in the F group compared to the control group and the significant decrease in the FL group compared to F group. Level of reduced glutathione did not show any change observed in any of the groups.

6) Liver TNFα level showed no significant deviation in all groups of rats.

Recommendation

Avoid the consumption of high fructose as it causes hyperglycemia, hyperinsulinemia, insulin resistance and hypertriglyceridemia and we advise giving probiotic to patients suffer from hepatic metabolic changes.