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EVALUATION THE ACTIVITY OF GLUCO HERB DM_2 AS NATURAL DRUG AGAINST DIABETES MELLITUS (TYPE 2) AS COMPARISON STUDY WITH METFORMIN DRUG

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ABSTRACT

Over the last century, food habits and human life style have drastically changed which lead to various chronic disease. Diabetes mellitus is one such disease which is causing serious problems to human heath. Hence focus has been turned to words the traditional system of medicine. Medicinal plants play an important role in the management of diabetes mellitus. The aim of this study was evalution of gluco herb DM_2 as natural agent which approval from herbal medicine central of Iraqi ministry of health giants Diabetes mellitus this natural drug included three medicinal plant were *Artemisia vulgar, Trigonella foenum-gracun* and *Coriadrum sativum* this study included 320 patients newly diagnosed type2 diabetes mellitus and 60 health subjected as control. Patients were randomized into two group, first group included 160 treated with metformin 850_{mg} three times daily, befor meal, group 2 also included 160 patients were treated with gluco herb DM_2 500_{mg} (2capsul size 250_{mg}) three times meal, before male. Blood samples were used for determination lipid profile, fasting blood glucose, alanine aminotransferase and serum creatinine. The results of this study were showed the significant effect of gluco herb MD_2 on fasting and after 2hr Pstprandial blood glucose levels. The significant reduction in fasting and postprandial blood glucose levels were observed in treated patients after 4 and 8 weeks treatment when compared with 1=0 zero level values (before treatment). Also the gluco herb DM_2 was gave significant decreasing of LDL and significant increasing of HDL-C with decreasing of TG after 4 weeks of treatment when compared to zero level values. Metformin 850_{mg} was gave

significant effete in all parameters. With the results of gluco herb DM_2 is a consider best than metformin. and recommendation, this natural drug may be better and more safety than synthetic oral hypoglycemic agent can produce serious side effects.

KEYWORD: Diabetes Type 2, Metformin, gluco herb DM_2.

INTRODUCTION

Diabetes mellitus is a metabolic disorder characters by hyper glycaemia, abnormal lipid and protein metabolism along with specific long term complication affecting the retina, Kidney and nervous system.[1] Diabetes mellitus may be categorized into several types, but the two major types are type 1 and type 2.[2]

Type 2 diabetes is the commonest form of diabetes and is characterized by disorder of insulin secretion and or insulin resistance.

In the non-pharmacological treatment, weight management and exercise are the initial focus because insulin resistance can be dramatically improved with minimal weight loss (10% of body weight) and drug therapy is rement.[3] There are different chemical drugs used to management and control of type 2 diabetes mellitus such metformin hydrochloride which consider is one of the medicines called oral hypoglycemic.[4]

Although the benefits of metformin in control of type 2 diabetes mellitus but its contra indications were included hypersensitivity to metformin any type of acute metabolic acidosis (such as lactic acidosis, diabetic ketoacidosis), acute conditions with the potential to alter renal function such as dehydration, sever infection, shock, acute or chronic disease with may cause tissue hypoxia such as cardiac or respiratory failure, recent myocardial infection, hepatic insufficiency, acute alcohol intoxication and alcohol ism[5], Therapeutic remedies from the herbs or medicinal plants have been utilized with success to treat this disorder its compictions with arelatively less side effects.

Medicinal plants or herbs have been used ancient times for the treatment a variety of diseases such as diabetes mellitus.[6]

The role of medicinal plants in the management or control of type 2 diabetes mellitus may be belong to different bio active compound especially flavonoid glycoside, trepens, tannins, etc.[7]

Therfor, present work was conducted to investigate the natural drug (Gluco herb DM2) which a herbal formula have a proval from national center of herbal medicine / Iraqi ministry of health, on fasting, 2hr, postprandial blood glucose, lipid profile, ALTienzyme and serum creatinine in type 2 diabetic patients, compared with metformin 850 three time dialy as control.

MATERNAL AND METHODS

- Patients

The study included 320 patients (240 male and 120 female) of newly diagnosed type 2 diabetes mellitus and 60 healthy subjected (30 male and 30 female) as control. Patients were interviewed according to the patient information sheets. All newly diagnosed type 2 diabetic. Patients enrolled in the study were treated and followed by specialized physician patients were randomized into two groups. Group 1 included 160 patients (70 male and 90 female), their ages range between 40-65 years (48.9+5.9) treated with metformin 850mg three times daily before male. Group 2 included 160 patients (85 male and 75 female) theirs ages rang between 41-68 years (52.1 $\pm$ 6.8) treated with (Gluco herb DM2) 250mg for each capsule and used two capsule three times daily before male. All patients were followed after 4 and 8 weeks of treatment.

- Control

Sexist healthy subjected (24 male and 36 female) with ages rang between 40-63 years (41.8$\pm$6.9) were enrolled in the study and served as control group.

- Drugs

Drug	Dose	Supplier
Metformin	850mg Tablet	Novo Nordisk / Dan mark
Gluco herb DM2	250mg Capsule	Al-Razi center For herbs

- Blood Samples

Befor drug treatment, eight ml of venous blood was drawn from each patient of newly diagnosed type 2 diabetes mellitus who was fasted at least for 8 hours.

Using sterile disposable syringe 23G, the blood was transferred into disposable plain tube and let stand for 30 minutes to clot, serum was separated by centrifugation at 3000 rpm for 5 minutes, which was collected in plain tube and kept frozen unless analyzed immediately. The

Serum was utilized for determination of total cholesterol (Tc), triglyceride (TG), high density lipoprotein cholesterol (HDL-C) low density lipoprotein cholesterol (LDL-C), glucose, alanine aminotransferase (ALT), and serum creatinine (SCR). The same procedures were carried out in blood samples from patients after 4 and 8 weeks of treatment.

- Commercial Kits

Kits	Supplier
Kit for determination of serum glucose	Biolabo SA/France
Kit for determination of serum cholesterol	Biolabo SA/France
Kit for determination of serum HDL cholesterol	Biolabo SA/France
Kit for determination of serum triglycerides	Biolabo SA/France
Kit for determination of serum creatinine	Biomeriex/ France
Kit for determination of serum ALT	Biomeriex/ France

- Statistical analysis

All values were represented as mean ± SD. Analysis of variance (ANOVA) were used to find the diffrences among groups.

Duncan test was used to find the factor effect. P Values less than 0.05 was considered significant.[8] Correlation coefficient (r) was used to determine the relationship between fasting and two hours postprandial blood glucose for each diabetic group who was treated by specific drug.

RESULTS

Table (1) showed the effect of (Gluco herb MD2) ON fasting and 2hr postprandial blood glucose levels in diabetic patients treated with this drug (group1) at 4 and 8 weeks of treatment. Significant reduction in fasting and postprandial blood glucose levels were observed in treated patients after 4 and 8 weeks of treatment when compared to zero level values (before treatment).

However, the fasting and postprandial blood glucose level after 8 weeks of treatment were higher than the control (healthy) but statistically insignificant.

The same table also showed that Gluco herb DM2 significantly increase HDL-C, and decreased TG after 4 weeks of treatment when compared to zero level values. Reduction of atherogenic index was also observed in treated patients when compared to zero levels values, while these values after 4 and 8 weeks of treatment were similar to the values of control individuals.

ALT values were significantly reduced in treated diabetic patients compared to zero level values.

Table 1: Effect of Gluco herb DM2 on serum fasting blood glucose, 2hrs postprandial glucose, lipid profile, alanine aminotransferase, and serum creatinine after 4 and 8 of weeks of treatment.

Parameter	Control (n=60)	Before treatment (n=160)	4 weeks after treatment (n=160)	8 weeks after treatment (n=160)
FBG mmol/L	5.64±2.22[a]	9.86±1.98[b]	7.30 ± 1.77[c]	6.17 ± 1.76[a]
2hrvPPG mmol/L	7.94±3.10[a]	15.22±2.21[b]	9.90±2.38[c]	8.10±2.21[a]
TC mmol	4.88±1.89[a]	5.06±1[a]	4.99±1.60[a]	4.95±1.13[a]
LDL-C mmol	2.45±0.94[a]	2.76±0.77[b]	2.95±0.58[a]	2.55±0.40[a]
HDL-C mmol	1.52±0.43[a]	0.99±0.34[b]	1.40±0.42[a]	1.41±0.53[a]
TG mmol	1.94±0.90[a]	2.90±0.90[b]	2.19±0.93[a]	2.14±0.78[a]
Atherogenic index TC : HDL	3.21[a]	5.11[b]	3.56[a]	3.51[a]
Atherogenic index LDL : HDL	1.61[a]	2.78[b]	1.85[a]	1.80[a]
ALT (IU)	16.82±5.31[a]	27.32±4.37[b]	18.05±3.63[a]	18.18±5.09[a]
Scr mmol/L	62.73±7.73[a]	63.84±6.07[a]	63.86±6.10[a]	63.89±6[a]

Data represent by mean + SD.

Values with non-identical superscript (a, b, c) for same parameter indicate significant difference at level P< 0.05 N=Number of subjects.

Table 2 showed the effects of (metformin hydrochloride 850mg film coated tablets) three times daily before meale on fasting and 2hr postprandial blood glucose levels in diabetic patients treated with metformin (group 2) at 4 and 8 week of treatment.

Significant reduction in fasting and postprandial blood glucose levels were observed in treated patients when compared to zero level values.

Table 2: Effect of metformin on the serum fasting blood glucose, 2hrs – postprandial glucose, lipid profile, alanine aminotransferase, and serum creatinine after 4 and 8 of weeks of treatment.

Parameter	Control (n=60)	Before treatment (n=160)	4 weeks after treatment (n=160)	8 weeks after treatment (n=160)
FBG mmol/L	5.64±2.22[a]	9.77±1.70[b]	7.32±1.92[c]	6.23±1.78[a]
2hrvPPG mmol/L	7.94±3.10[a]	14.56±2.3[b]	10.42±2.53[c]	9.27±2.11[a]
TC mmol	4.88±1.89[a]	5.01±1.25[a]	4.93±1.60[a]	4.90±1.32[a]
LDL-C mmol	2.45±0.94[a]	2.68±0.81[a]	2.57±0.68[a]	2.54±0.63[a]
HDL-C mmol	1.52±0.43[a]	0.99±0.29[b]	1.38±0.37[a]	1.39±0.49[a]
TG mmol	1.94±0.90[a]	2.93±0.81[b]	2.16±0.81[a]	2.12±0.62[a]

Atherogenic index TC : HDL	3.21[a]	5.06[b]	3.57[a]	3.52[a]
Atherogenic index LDL : HDL	1.61[a]	2.70[b]	1.86[a]	1.84[a]
ALT (IU)	16.82±5.31	26.55±6.7[b]	18.02±4.47[a]	18.30±5.26[a]
Scr mmol/L	62.73±7.73[a]	63.11±6.76[a]	63.07±6.91[a]	63.32±6.95[a]

Table 3 Showed the percentage decrease of fasting and postprandial blood glucose in diabetic patients treated with gluco herb DM2 and metformin 850mg.

Table 3: Percentages decrease of fasting and 2-hours postprandial blood glucose in group 1, 2 and 3 of diabetic patients after 4 week and 8 weeks of treatment.

Drugs	**Decrease of fasting blood glucose**		**% Decrease of two hour post prandial blood glucose**	
	After 4 weeks	**After 8 weeks**	**After 4 weeks**	**After 8 weeks**
Gluco herb DM2	26.16%	37.61%	34.95%	46.78%
Metformin 850mg	25.07%	36.23%	28.43%	36.33%

It is obvious from the table 3 that gluco herb DM2 produces higher percentage decrease in fasting and postprandial blood glucose level after 4 and 8 weeks of treatment when compared to metformin. In table 4 the percentage of change in atherogenic index (TC:HDL) is higher in diabetic patients treated with gluco herb DM2. Also the percent antherogenic index LDL:HDL showed higher reduction than the atherogenic index TC:HDL in diabetic patients treated with gluco herb DM2 and metformin after 4 and 8 weeks of treatment.

Table 4: Percentage changes of atherogenic index TC:HDL and LDL:HDL in groups land 2 of diabetic patients after 4 and 8 week of treatment.

Drugs	**% change of atherogenic index TC:HDL**		**% change of atherogenic index LDL:HDL**	
	After 4 weeks	**After 8 weeks**	**After 4 weeks**	**After 8 weeks**
Gluco herb DM2	30.33% (↑)	31.31% (↑)	33.45% (↑)	35.25 (↑)
Metformin 850mg	29.44% (↑)	30.43% (↑)	31.11% (↑)	31.85 (↑)

↑ = increase lowering atherogenic

Table 5 Showed high percent of adverse effect in hypoglycemia and hyperseneitity of metformin than that of gluco herb DM2, after 8 weeks of treatment.

Table 5: Adverse – effects in the two group of diabetic patients treated with gluco herb DM2 and metformin 850mg after 8 weeks of treatment.

Adverse effects	**Group 1 Gluco herb DM2**	**Group 2 Metformin 850mg**
Hypoglycemia (mild)	20%	35%
Hypersensitivity	–	6
Tolerability	Good	Good
Headache	15%	30%

DISCUSSION

The activity of the gluco herb DM2 may be belong to different reseans or mechanisms, such as bioactive compounds of herbs used in this herbal formula where Artemisia, fenugreek and corundum plants have flavonoids glycosides. such as querseitin, apigenin, rutine, trigonilin and thjone.[9-10]

The hypothesized that the reduction in blood glucose level may be due to the presence of thujone as a major component of Artemisia plant.[11] In the other hand, the effect of the Artemisia plant on plasma cholesterol was gave significant in diabetic of rats.[12] The seed of fenugreek plant have anti-oxidant activity which improved blood glucose level.[13] The daily oral intake of fenugreek seeds which reduced significantly serum - amylase activity, then the polyphenols contents of its seeds may be a good adjuvant for the treatment of diabetes by decreasing of resistin level mechanism.[14]

CONCLUSION

Our results strongly suggest that the onhancement of serum insulin levels in due to insulintropic effects of bioactive compound of herbal Content of gluco herb DM2. According to WHO recommendation, this herbal drug may be better and more safety than synthetic oral hypoglycemic agent can produce serious side effects.

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