

BIOCHEMICAL EFFECTS OF SOME COMMONLY USED LEGUMES ON ALLOXAN DIABETIC RATS

By

T. A. Hafez ; S. M. A. Azma ; H. A. Nada and
N. M. Ismail

From

Biochemistry Department, Faculty of Medicine, Mansoura University.

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INTRODUCTION

Previous investigation showed that alloxan partially destroys the pancreatic islets of langerhans House, (1958), and is being used experimentally to induce diabetes in rodents. Alloxan changed the ultra structure of rats islets similarly as in rabbits Williamson and Lacy, (1959), leading to insulin deficiency and consequently hyperglycemia, glucosuria and decreased glycogen content in the animal body Scarborough, (1970), as well as disturbance in lipid metabolism Martin et al., (1983).

It was reported by some research workers that feeding on diet containing raw legumenous seeds as raw soy bean with a naturally high trypsin inhibitor content developed hypertrophy of the acinar cells of exocrine pancreas Melmed et al., (1973), and may

lead to the recovery of the destructed beta-cells caused by alloxan Ibrahim et al., (1979).

Jenkins et al. (1978), found that leguminous seeds fibers has been used successfully in the diet to reduce glucosuria in diabetics.

Anderson, (1979), found that such diet have successfully reduced serum triglycerides concentration in hypertriglyceridaemic men.

Miranda and Horwitz (1978), suggested that it is possible to achieve substantial lowering of blood glucose level of diabetic patients by increasing dietary fibre content, without the need for increasing insulin.

Roy and Schneemen (1981), showed that dietary vegetable protein especially soy group lowered plasma cholesterol compared to animal proteins. Soy proteins were found to pos-

RESULTS

uright before sacrifice, the blood samples were collected for estimation of : Glucose Trinder, (1969), total cholesterol (Fleegg, 1973), triglycerides esterol (Wamick et al., 1983) and LDL cholesterol (Fredriksson et al., 1967).

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MATERIAL AND METHODS

sess specific effect on hypercholesterolemia and arteriosclerosis in rabbits Kritchevsky, (1983).

been in diabetic rats Madar, (1983), which enhance glucose utilization.

This results agree with that reported by Mahalko et al. (1984) & Madar et al., (1985).

This results is contradect to Jenkins et al., (1980) who reported that legumenous seeds are one of the high fibre foods which cause only nonsignificant rise in the blood glucose level.

It was found that feeding Termis and Helba mixture everymorning for one month caused a significant decrease in serum triglycerides, total cholesterol as well as LDL levels. These results are in agreement with many reports.

Grand et al, (1974), reported that dried legumes diet have successfully reduced serum triglycerides concentration in hypertriglyceridaemic men.

Maurive & Jensen (1978) and Madar (1983), reported that soy been feeding caused a significant drop in liver and plasma triglycerides and cholester-erol.

There is a significant increase in HDL-cholesterol, this result is in agreement with Jenkins et al, (1983), they reported that soy been protein share in composition of HDL.

Many mechanisms are available to explain the hypocholesterolemic action of dried legumes as soy been and termis, among which are the suppression of cholesterol biosynthesis (Qureshi et al., 1983), the increase in cholesterol excretion (Chang & Ohnson, 1977), and increase catabolism (Kritchevsky, 1983).

A sharp decrease in total cholesterol accompanied by a rise in HDL-cholesterol suggest the improvement of cholesterol metabolism.

In conclusion, the promising results in the improvement of fasting blood glucose level and blood lipid pattern of diabetic rats kept on feeding termis and helba mixture everymorning. And it is a good habit for the diabetic patients to take a mixture of termis and helba every morning before breakfast : What remain to be elucidated is to understand the nature of the chemical agents of this mixture that may be responsible for that observation, as well as the histopathological study of B-cells of pancreas and serum insulin level before and after mixture intake to prove the mechanism of actions. These points must be done in further investigation.

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SUMMARY AND CONCLUSION
The present work was undertaken in an attempt to investigate the effect of long use of some selected legumes on fasting blood glucose level and blood lipid pattern in alloxan diabetic rats. From the present study, it is concluded that eating terms and heliba mixture before breakfast every morning leads to improvement of fasting blood glucose level and blood lipid pattern of alloxan diabetic rats. Feeding diet containing terms and heliba to diabetic rats for one month induced significant decrease in fasting blood glucose, total cholesterol, triglycerides and low density lipoprotein levels with a high significant increase in high density lipoprotein level.

Table (I) : Fasting blood glucose level (mg/dl) in alloxan diabetic rats before and after feeding termis and helba mixture.

	Before eating	After eating
Mean	178.6	108.3
± S. E. M.	±9.75	±3.04
P		0.001**

Table (II) : Total cholesterol, triglycerides, HDL-cholesterol and LDL (mg/dl) in alloxan diabetic rats before and after feeding termis and helba mixture.

	Before eating				After eating			
	Total cholesterol	Trigly-cerides	HDL cholesterol	LDL	Total cholesterol	Trigly-cerides	HDL cholesterol	LDL
Mean	224.3	176.8	34	160	188.3	58.5	57.2	119.11
± S. E. M.	±12.59	±5.37	±3.5	13.58	±3.66	±5.41	±1.41	±4.58
P					0.02*	0.001**	0.001**	0.005

* Significant.

** Highly Significant.

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