BIOCHEMICAL EFFECTS OF SOME COMMONLY USED LEGUMES ON ALLOXAN DIABETIC RATS

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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 been 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-
ing effect of indiscriminate seeding as soy
right depend on the glucagon lowering
Another possible interpretation
the beta cells behaving as (1979).
which may be due to the generation of the dehydro-
A significant decrease in fasting blood
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EDUCAIION

This is well illustrated in Table (i) &
level, total cholesterol (p > 0.02), LDL (p > 0.005) levels,

RESULTS

Preadolescent et al., (1972).
levels (p > 0.005), total cholesterol
levels (p > 0.02), total cholesterol
cholesterol (p > 0.02), and LDL
cholesterol (p > 0.002), HDL-cho-
cholesterol (p > 0.02), total cholesterol
cholesterol (p > 0.002) levels.

MATERIAL AND METHODS

rats. Blood lipids pattern in alloxan diabetic
primates were collected for estimation of
levels were decreased in fasting blood glucose level and
Alloxan was used by 150 mg/kg body weight (the
ity in body weight and diabetes, as already habits
study the possible effects of limes and helba
mixtures the diabetic animals were
mixed the mixture. Animals were fasted over-
After one month from taking the
mixtures, the mixture of limes and helba
spoonfull mixture of limes and helba
been eaten at lunch and take a tea.
The alloxan diabetic rats have
performed. 150 mg/kg were selected for the ex-
loxon (raising blood glucose above
mix after 3 days from injection of al-
Rats which showed hyperglycemia-
eat.

animal were fasted 24 hours before in-
alloxan (50 mg/kg body weight) the
by a single intraperitoneal injection of
work. They were rendered diabetic
Made alloxan rats weighing about

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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 contradext 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 cholest-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.
SUMMARY AND CONCLUSION

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

<table>
<thead>
<tr>
<th></th>
<th>Before eating</th>
<th>After eating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>178.6</td>
<td>108.3</td>
</tr>
<tr>
<td>± S. E. M.</td>
<td>±9.75</td>
<td>±3.04</td>
</tr>
<tr>
<td>P</td>
<td></td>
<td>0.001**</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Before eating</th>
<th>After eating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cholesterol</td>
<td>224.3</td>
<td>188.3</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>176.8</td>
<td>58.5</td>
</tr>
<tr>
<td>HDL cholesterol</td>
<td>34</td>
<td>57.2</td>
</tr>
<tr>
<td>LDL</td>
<td>160</td>
<td>119.11</td>
</tr>
<tr>
<td>± S. E. M.</td>
<td>±12.59</td>
<td>±3.66</td>
</tr>
<tr>
<td>±5.37</td>
<td>±3.5</td>
<td>±5.41</td>
</tr>
<tr>
<td>±3.5</td>
<td>13.56</td>
<td>±1.41</td>
</tr>
<tr>
<td>P</td>
<td>0.02*</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

* Significant.  ** Highly Significant.
REFERENCES

BIOCHEMICAL EFFECTS OF SOME COMPOUNDS ETC.


ביוכימיית

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