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ABSTRACT
The antidiabetic activity of aqueous extract of Coriandrum sativum L. (Apiaceae) has been studied on streptozotocin induced diabetic rats. In doses of 250 mg/kg and 500 mg/kg the aqueous extract showed significant decrease in blood glucose level. It also decreased total cholesterol level and increased high density lipid cholesterol significantly.

Keywords: Coriander, Streptozotocin, Diabetes mellitus, Cholesterol, Lipid profile.

INTRODUCTION
Coriandrum sativum L. (Apiaceae) is an annual herb native to Mediterranean region. It is commercially grown in India, Morocco, erstwhile USSR, Hungary, Poland, Romania, Mexico and USA. India is the largest producer of coriander in the world. Major production centers are Rajasthan, Maharashtra, Gujarat, and Karnataka1. The fruits are gathered ripe in late summer2, 3. The fragrant odour and pleasant aromatic taste of coriander is due to the presence of the essential oil which is about 1 per cent in seeds. The chief constituent of oil is (+) linalool (coriandrol)4. The fruits are given in spasmotorrhoea, leucorrhoea and in rheumatic fever. Dried seeds are known to possess diuretic and aphrodisiac properties5. It has traditionally been referred to as antidiabetic6, anti-inflammatory and cholesterol lowering7, 8. It is also reported to have antimicrobial9, 10, antihelmintic11, antioxidant12, antifertility13, antiproliferative14, antiulcer17, hepatoprotective18, anthelmintic11, antioxidant12, antifertility13, antiproliferative14, antiulcer17, hepatoprotective18, anticonvulsant15, diuretic 16, and larvicidal activities21. The present paper described antidiabetic activity and lipid profile of aqueous extract of the fruits of C. sativum in rats.

MATERIAL AND METHODS
Plant Material
The fruits of Coriandrum sativum were collected from the Kendriya Bhandar, Jamia Hamdard campus, New Delhi. The plant was identified by Prof M. P. Sharma, Taxonomist, Department of Botany, Faculty of Science, Jamia Hamdard, New Delhi. A voucher specimen (PRL/JH/28/07) of drug is preserved in the Phytochemistry Research Laboratory, Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Jamia Hamdard.

Preparation of the Extracts
The air dried powdered drug (500 g) was extracted with water in a Soxhlet apparatus for 6 hour. Aqueous extract of the plants was evaporated to dryness under pressure to give solid residue. The residue was stored at 0 - 4 °C for subsequent experiment.

Animals
Wistar albino rats (150-200 g) were obtained from Central Animal Facility, Jamia Hamdard University and maintained in 25 ± 1 °C, with 55 ± 5 % humidity with 12 hr light/dark cycle. The animals were given standard pellet diet (Lipton rat feed, Ltd., Pune) and water ad libitum throughout the experimental period. The Institutional Animal Ethics Committee approved (173/CPCSEA/JH/No.463) the experiments. All the extracts and the standard drugs were administered orally.

Chemicals
All chemicals and reagents used were of analytical grade. Streptozotocin (STZ) (Spectrochem Pvt. Ltd. Mumbai, India) was obtained from Chopra chemicals (Delhi, India).

Drugs
Standard drug: Glimeperide prepared in Tween 80 solution (1 %); Test drug: plant extract, in CMC (1 %) solution.

Induction of Diabetes
The animals were fasted for 16 hour prior to the induction of diabetes. STZ freshly prepared in citrate buffer (pH 4.5) was administered i.p. at a single dose of 50 mg/kg. Development of diabetes was confirmed by polydipsia, polyurea and by measuring blood glucose concentrations 72 hour after injection of STZ. Rats with blood glucose level of 250 mg/dl or higher were considered to be diabetic and selected for experiment. Diabetic animals were randomly assigned to groups. Group I contained normal animals and served as normal control. Group II served as diabetic control (toxic). Groups I and II received vehicle during the experiments, while the Group III received the reference standard drug glimepiride (0.1 mg/kg) and groups from IV to V received the aqueous extracts of coriander fruits 250 mg/kg (CS) and 500 mg/kg (CS), respectively.

Biochemical Estimation
Initial, 8th, 14th and 21st day non fasting blood glucose levels were determined just before administering the drugs. On the last day of experiment, blood samples were collected from tail vein from each animal. Serum was separated from the blood by centrifuging at 3000 rpm for 20 minutes for biochemical estimations of total cholesterol (TC) and high density lipid cholesterol (HDL-C)22, 23.

Estimation of Blood Glucose
The blood glucose level was estimated with One Touch Basic Glucometer (Accu Chek Active, Roche, Germany). Serum total cholesterol (TC), high-density lipid cholesterol (HDL-C), was estimated by using standard enzymatic colorimetric kits (Span diagnostic Ltd. Surat, India).

Statistical Analysis
Values are expressed as mean ± standard error of the mean. Statistical significance was calculated by using one-way analysis of variance (ANOVA) followed by Dennett's t- test. The values were considered statistically significant when the P- value was less than 0.05 (P<0.05). (Table 1 and table 2)

RESULTS AND DISCUSSION
The perusal of data revealed that the aqueous extract of fruits of *Coriandrum sativum* decreased the blood glucose level statistically significant (Table 1) when compared with diabetic control\(^ {14}\). The 500 mg/kgbw dose was found better than 250 mg/kgbw however, the standard glibperide was better in comparison to both doses. Treatment with aqueous extract decreased total cholesterol level and increased high density lipid cholesterol level, which was statistically significant when compared with normal control\(^ {25}\) (Table 2). The above findings justified the antidiabetic activity of fruits of *Coriandrum sativum* which proved the traditional claim of antidiabetic activity of the aqueous extract.

**Table 1: Effects of aqueous extract of coriander fruits on blood sugar level**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Treatment</th>
<th>Blood glucose level in mg/dl</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st day</td>
<td>8th day</td>
</tr>
<tr>
<td>Normal; (I)</td>
<td>113.83±4.79*</td>
<td>115.67±1.02*</td>
</tr>
<tr>
<td>(STZ); 50 mg/kg; (II)</td>
<td>368.33±5.05</td>
<td>373.50±1.76</td>
</tr>
<tr>
<td>(Glibperide); 0.1 mg/kg; (III)</td>
<td>374.67±5.06</td>
<td>161.33±2.21*</td>
</tr>
<tr>
<td>CS(_{50}); (IV)</td>
<td>368.67±2.28</td>
<td>183.83±4.29*</td>
</tr>
<tr>
<td>CS(_{50}); (V)</td>
<td>361.83±1.47</td>
<td>180.50±5.07*</td>
</tr>
</tbody>
</table>

All values are Mean ± SEM; n=6

*P<0.01 compared with diabetic control (II)

**Table 2: Effect of aqueous extracts of coriander fruits on lipid profile**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Treatment</th>
<th>TC</th>
<th>HDL-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Normal</td>
<td>114.17±2.84*</td>
<td>47.50±1.18*</td>
</tr>
<tr>
<td>II</td>
<td>STZ; 50 mg/kg</td>
<td>252.83±2.70*</td>
<td>35.67±1.42*</td>
</tr>
<tr>
<td>III</td>
<td>Glibperide; 0.1 mg/kg</td>
<td>113.00±2.37</td>
<td>44.33±1.95</td>
</tr>
<tr>
<td>IV</td>
<td>CS(_{50}); 250 mg/kg</td>
<td>135.50±1.88*</td>
<td>33.67±1.52*</td>
</tr>
<tr>
<td>V</td>
<td>CS(_{50}); 500 mg/kg</td>
<td>125.17±2.17*</td>
<td>39.33±0.96*</td>
</tr>
</tbody>
</table>

All Values are Mean ± SEM; n=6

*P<0.01 when compared with normal control group

**REFERENCES**
