EVALUATION OF ANTIDIABETIC ACTIVITY OF SOME FOLKLORE ETHANOMEDICINAL PLANTS ON FEMALE ALBINO RATS

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Received August 03, 2016; Accepted August 20, 2016; Published September 02, 2016;

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ABSTRACT

Ailanthus excelsa, cressandra Infundibuliformis have been used traditional system of medicine to treat various health problems in tribal areas. The present study was carried out to investigate the antidiabetic potential of these plants. The ethanolic leaves extract of these plants were tested in streptozotocin induced diabetic rats. In long term treatment of STZ induced diabetic rats, the degree of the effect was determined by measuring blood glucose, triglycerides, cholesterol and creatinine levels. Both the extracts showed a significant anti-diabetic activity comparable with that of glibenclamide. The methanolic extracts also showed improvement in lipid profile and liver kidney functions which reinforce as a possible mechanism of their antidiabetic activity.

KEYWORDS: Ailanthus excela, cressandra Infundibuliformis, antidiabetic ethanomedicinal

INTRODUCTION

Diabetes mellitus is one of the most common metabolic chronic diseases in the world. It is a group of disorder characterized absolute or relative deficiencies in insulin secretion and action that are associated with high blood sugar level, and cause disturbances of carbohydrates, protein and lipid which often leads to complications such as blindness, kidney failure, coronary heart disease, circulatory problem and premature death. Medicinal plants used to treat diabetic condition are of considerable interest and a number of plants have shown varying degree of hypoglycemic and anti-hypoglycemic activity, used for many treatments [13]. There is an increasing demand by patients to use natural products with antidiabetic activity due to side effects associated with the use of insulin and oral hypoglycemic agents. There are numerous traditional medicinal plants reported to have hypoglycemic properties such as Azadirachta indica, Trigonella foenum, Memordica charantia, Allium sativum which are commonly used from centuries[7].

Ailanthus excelsa belongs to family Simaroubaceae having the common name Maharukh is used in Indian system of medicine for various purposes as in treatment of asthma, bronchitis, cough, arthritis and in antifertility, fever and pain relief, while cressendra infundibuliformes belong to family Acanthaceae [8]. The plant found abundantly in tropical areas and grown in horticulture. The plants having medicinal value such as aphrodisiac activity, hepatoprotective etc. Therefore, the present study is a small effort to gain scientific in sight in the knowledge of traditional medicine of this region [9].

MATERIAL AND METHODS

During the present work the ethnomedicinal field work was carried out in tribal hamlets, forest areas and different...
villages region of melghat region of Amravati district of Maharashtra, India. The plants were identified and authenticated by botanist Taxonomy expert.

The leaves of *Alianthus excels* and *cressandra infundibuliformis* plants were collected shade dried powdered and subjected to soxhlet extraction with ethanol for anti-diabetic study. The extract was evaporated to near dryness on a water bath, weighed and kept at 4°C in refrigerator until use.

All procedures with animal were conducted strictly in accordance with approved guidelines of committee for the purpose of control and supervision of experiments on Animals.

Healthy wistar strain female albino rats of about two months old and weighing 150-300 gm was procured at 25°C. The rats were allowed to acclimatize to laboratory environments for 15 days before experimentation. They were divided into 5 groups of 6 animals each and kept singly in separate cages during the experiment.

The present study was carried out with the aim of ascertaining preference in the Melghat region of Amravati district of Maharashtra the indigenous communities on traditional medicine to treat diabetes.

Group I as normal vehicle control, Group II as diabetic control, Group III diabetic animals received glibenclamide (10 mg/kg) group IV diabetic rats given leaf extract of *A. excelsia* (350 mg/kg body wt) and diabetic rats were given *c. infundibuliformes* leaf extract for 15 days. After experimental regimen animals were sacrificed, blood cholesterol, triglycerides, HDL, LDL and VLDL, cholesterol and Hb. In this model diabetes was induced by single intraperitoneal injection of STZ. After 13 days of STZ administration the survived animals showing blood glucose concentration more than 300 mg/dl considered as diabetics and used for experimentation. The rats randomly divided in five groups, each consisting of five animals. The highest dose 3500 mg/kg body weight of *Alianthus excels* alcoholic leaves extract alcohol extract of *cressandra infundibuliformis* leaves at the highest dose of 4000 mg/kg body weight were used for acute toxicity activity.

Clinical toxicity symptoms such as respiratory distress salivation weight loss one tenth highest does were selected for present investigation. All the data expressed as mean ± SE statistical analysis was done by student t test.

**RESULT**

Table 1 showed the blood glucose Levels of normal control, diabetic control ethanolic leaves extracts of experimental plants, glibenclamide treated rats. In diabetic control rats, the increased in blood glucose concentration was observed after including of STZ. The result of the present study demonstrated the antidiabetic activity of ethanolic extracts of *Alianthus excels*, *Cressandra infundibuliformis* leaves were found to significantly decrease the plasma blood glucose after 15 days of treatment as compared to control.

<table>
<thead>
<tr>
<th>Treatment b.w. group mg/kg</th>
<th>Blood sugar</th>
<th>Serum cholesterol</th>
<th>Serum triglycerides</th>
<th>HDL cholesterol</th>
<th>LDL cholesterol</th>
<th>VLDL cholesterol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal control</td>
<td>115 ± 6.55</td>
<td>144.78± 20.4</td>
<td>66.31± 12.33</td>
<td>43.9± 3.19</td>
<td>87.5 ± 15.5</td>
<td>13.26± 2.39</td>
</tr>
<tr>
<td>Diabetic control</td>
<td>368.6± 12.66</td>
<td>212.9± 8.10</td>
<td>85.52± 5.84</td>
<td>44.15± 2.39</td>
<td>89± 2.66</td>
<td>17.10±1.16</td>
</tr>
<tr>
<td>Standard glibenclamide (10mg/kg)</td>
<td>112±2.16</td>
<td>82.5±0.67</td>
<td>80.6±0.80</td>
<td>44.13±2.22</td>
<td>77±1.61</td>
<td>18.32±1.74</td>
</tr>
<tr>
<td>Ailanthus excels (350mg/kg)</td>
<td>8.6.63±0.66</td>
<td>62.83±0.60</td>
<td>58.83±0.11</td>
<td>26.5±0.77</td>
<td>24.86±0.769</td>
<td>12.3±0.88</td>
</tr>
<tr>
<td>Cressandra /infundublifmis</td>
<td>57.66±0.72</td>
<td>62.83±0.22</td>
<td>82.83±0.48</td>
<td>25±0.58</td>
<td>21.36±0.66</td>
<td>12.26±0.66</td>
</tr>
</tbody>
</table>
Despite considerable program in the treatment of diabetes by oral hypoglycemic agents, search for newer drugs continues because the existing synthetic drugs have several limitations. In recent time there has been renewed interest in the plant remedies. Both experimental extracts plays important role in diabetic. In this study subsequent photochemical analysis indicated that the high content of total polyphones in the test leaves might be related to the anti diabetic and anti-peroxides effects of experimental plant leaves.

The values for the serum creatinine after the treatment with all the experimental group showed significant decrease. It also decreases total cholesterol levels in both experimental groups in the cholesterol level. It was also showed the significant increase in the HDL value compared to diabetic control animal group. Values are expressed as mean±S.E. from six animals in each group P values when compared with control, ns=non-significant.

DISCUSSION

Diabetes mellitus is possibly the world’s largest growing metabolic disorders for the treatment of diabetes[2]. There is an increasing demand by patient to use the natural product with ant diabetic activity to overcome the side effects and toxicity of synthetic drugs. Herbal anti diabetic drugs are prescribed widely because of their effectiveness, less side effects and relatively low cast [4]. In the study observed that Alianthus excels, Cressandra infundibuliforms leaves significantly inhibited the hematological changes in STZ – induced diabetic rats. It is obvious from the present data that the STZ induced several disturbances in carbohydrate, lipid and protein metabolism in experimental rats [11]. Blood glucose, total cholesterol, triglyceride LDL and VLDL cholesterol, urea, uric, acid were significantly increased while the levels of HDL-cholesterol markedly decreased.

The result of the present study demonstrated the anti diabetic activity of ethanolic extracts of Alianthus excels, Cressandra infundibuliforms leaves were found to significantly decrease the plasma blood glucose after 15 days of treatment all the experimental extracts plays important role in diabetic In this study subsequent phyto chemical analysis indicated that the high content of total polyphenols in the test leaves might be related to the anti diabetic and anti-peroxides effects of the experimental plants leaves [5,9].

Result of the present study also support the finding [1,3,10]. The ethanolic extract of the leaves has antihyperglycemic activity probably due to increased uptake of glucose by enhanced glycogenesis is the liver and also due to increase in insulin sensitivity [12].

CONCLUSION

This study has shown that administration of alianthus excelsa, cressandra infundibuliformis leaves extract appears to be relatively non-toxic to animals thus all the above ethanolic plants extract shows protective effects in diabetic complication in STZ induced diabetic rats.

REFERENCES