HEPATO-PROTECTIVE ACTIVITY OF *LAUNAEA INTYBACEA* IN CARBON TETRACHLORIDE INDUCED HEPATO-TOXICITY IN ALBINO RATS

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ABSTRACT: The present study was conducted to evaluate the hepato-protective activity of pet ether, chloroform, ethyl acetate and water extract of aerial parts of *Launaea intybacea* are evaluated in CCl\(_4\)-induced hepatotoxicity in albino rats. Silymarin (200 mg/kg) was given as reference standard. The ethyl acetate and water extracts of aerial parts of *Launaea intybacea* have shown very significant hepatoprotection against CCl\(_4\)-induced hepatotoxicity in albino rats in reducing serum total bilirubin, direct bilirubin, SGPT and SGOT levels.

Key words: *Launaea intybacea*, hepatoprotective, CCl\(_4\) and Silymarin

INTRODUCTION

*Launaea intybacea* belongs to family Asteraceae is a herb found in though out India and common in coastal areas\(^1\). The plant is used in folk medicine, ethnobotanical used of the plant related to its hepatoprotective, alkaloids, steroids, triterpenids, saponins, flavonoids, xanthones, phenolic acid tannic acid and gallic acid were isolated from the plant many such compounds have protective effects due to there pharmacological activities Liver disease remains one of the serious health problems\(^2\). Herbs play a major role in the management of various liver disorders. A number of plants possess hepatoprotective property\(^3\). Due to excessive exposure to hazardous chemicals, the free radicals generated will be so high such that they overpower the natural defensive system leading to hepatic damage and cause jaundice, cirrhosis and fatty liver, which remain one of the serious health problems. Carbontetrachloride (CCl\(_4\)) is one such hazardous chemical which induces hepatopathy through membrane lipid peroxidation by its free radical derivative. Excessive production of the reactive species manifests in tissuethiol depletion, lipid peroxidation, plasma membrane damage etc., culminating into severe hepatic injury\(^4\). With this scientific information, the present study was designed with an aim to assess the hepatoprotective activity of the different extract of aerial parts of *Launaea intybacea*, against CCl\(_4\) induced liver damage.

MATERIALS AND METHODS

Plant material

The plant material used in this study was collected during month of January in Rajur Dist Sangamner, a India and authenticated by herbarium staff of Department of Botanical survey of India, Pune. A voucher specimen has been deposited in Botanical survey of India Pune (LI/ 980/2006)

Preparation of the Extract

The shade dried aerial part of *Launaea intybacea* was extracted with pet ether, chloroform and ethyl acetate successively by soxhlation method, water by maceration method, concentrated over water bath and evaporated under reduced pressure. The yields of extract were calculated.
Animals
Albino rats (either sex) of Sprague dawley strain, weighing 150-200g were used. The animals were acclimatized to laboratory conditions (RT-25°C) for 4 days and given pelleted animal feed (Hindustan Lever) and drinking water, Diagnostic reagent kits (Enzopak) were used for the estimation of serum SGPT and SGOT levels.

Toxicity studies
Acute toxicity study was performed for different extract according to the acute toxic classic method as per OECD guidelines, albino rats were used for acute toxicity study. The animals were kept fasting for overnight providing only water, after which the extracts were administered orally at the dose of 100, 200 and 400 mg/kg and observed for 16 days. If mortality was observed in 2 out of 3 animals, then the dose administered was assigned as toxic dose. If the mortality was observed in 1 animal, then the same dose was repeated again to confirm the toxic dose. If mortality was not observed, the procedure was repeated for further higher dose i.e., 400 mg/kg.

Hepatoprotective Activity
The animals were divided into seven groups comprising of six albino rats in each group using randomization technique and treated with the extract for seven days to assess the hepatoprotective potential of the plant. The first group (vehicle control) received vehicle for all the seven days. The second group was kept as toxin control and given only the CCl₄ treatment. The third group received pet ether extract in the dose of 200mg/kg p.o. and the fourth group received the chloroform extract in the dose of 200mg/kg p.o. fifth group received the ethyl acetate extract in the dose of 200mg/kg p.o sixth group received the water extract in the dose of 200mg/kg p.o and The seventh group received Silymarin in the dose of 200mg/kg, p.o. as a reference material for the study. All the animals except the vehicle control received CCl₄ on 16th day of the treatment. The animals were sacrificed by cervical dislocation after 48 hours of CCl₄ administration. The blood samples were collected by cardiac puncture in heparinized microfuge tubes. The blood samples thus collected were immediately centrifuged at 2200rpm for 15 minutes. When serum clearly separated out, the serum was analyzed for SGPT and SGOT levels using enzopak reagent kits by the method proposed by Reitman and Frankel. The results thus obtained were subjected to statistical analysis using student t-test and analysis of variance (Table: 1)
Table 1: Effect of different extracts of Launaea intybacea aerial parts on CCl₄-induced hepatotoxicity

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Groups</th>
<th>Total Bilirubin* (mg/dl)</th>
<th>SGPT (Units/ml) *</th>
<th>SGOT (Units/ml) *</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Control</td>
<td>0.74 ± 0.06</td>
<td>79.21 ± 1.12</td>
<td>193.22 ± 1.20</td>
</tr>
<tr>
<td>2.</td>
<td>CCl₄</td>
<td>2.30 ± 0.05</td>
<td>354.50 ± 1.10</td>
<td>330.24 ± 1.39</td>
</tr>
<tr>
<td>3.</td>
<td>Pet ether Extract (200mg/kg)</td>
<td>0.82 ± 0.04</td>
<td>120.34 ± 6.22</td>
<td>210.22 ± 1.21</td>
</tr>
<tr>
<td>4.</td>
<td>Chloroform Extract (200mg/kg)</td>
<td>0.80 ± 0.05</td>
<td>2310.43 ± 8.11</td>
<td>238.23 ± 1.1</td>
</tr>
<tr>
<td>5.</td>
<td>Ethyl acetateic Extract (200mg/kg)</td>
<td>0.76 ± 0.06</td>
<td>81.64 ± 6.10</td>
<td>197.16 ± 2.29</td>
</tr>
<tr>
<td>6.</td>
<td>Water Extract (200mg/kg)</td>
<td>0.71 ± 0.12*</td>
<td>78.78 ± 3.3*</td>
<td>192.06 ± 1.07*</td>
</tr>
<tr>
<td>7.</td>
<td>Silymarin (200mg/kg)</td>
<td>0.79 ± 0.04</td>
<td>79.31 ± 33.43</td>
<td>193.35 ±11.01</td>
</tr>
</tbody>
</table>

* Values of mean ± S.E.M. (n=6)
* P < 0.01 vs. control, Student’s t test

REFERENCES