

ANTIHEPATOTOXIC ACTIVITY OF COCCINIA INDICA

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ABSTRACT: Aqueous, light petroleum, chloroform, alcohol, benzene and acetone extracts of the leaves of *Coccinia indica* (Family: Cucurbitaceae) were screened for antihepatotoxic activity. The extracts were given after the liver was damaged with Ccl₄. Liver function was assessed based on liver to body weight ratio, pentobarbitone sleep time, serum levels of transaminase (SGPT, SGOT), alkaline phosphatase (SALP) and bilirubin. Alcohol and light petroleum were found to have good anti-hepatotoxic activity.

INTRODUCTION:

In traditional medicine various herbal preparations are being used for treating liver disorders. In the absence of an effective treatment in modern medicine, efforts are being made to find suitable herbal drugs.

The plant *Coccinia Indica* is well known in traditional medicine for its medicinal properties, especially, the extract in 5-10 grain doses is useful in indigenous practice in cold givers, seminal debility, fever, vomiting, jaundice, torpidity of the liver.

As a compound tincture of infusion it is most valuable in malarial fevers with or without enlargement of liver and spleen. Present study was designed to study the antihepatotoxic activity of aqueous, light petroleum, chloroform, alcohol, benzene and acetone extracts of the leaves of *coccinia indica* in albino rats where the extracts were given after the damage was induced with carbon tetrachloride.^{1,2,3}

EXPERIMENTAL

PLANT MATERIAL:

Whole plant of *Coccinia indica* was collected from in and around Chennai City and leaves were isolated and air dried in shade. The identity of these plants was confirmed by comparing with standard herbarium specimen.⁴

PREPARATION OF EXTRACT:

200 gm powdered material of leaves of *Coccinia indica* was extracted by Soxhlet apparatus with above mentioned solvents successively. The solvents were removed by distillation and dried on a desiccator. The residue is used for this study.^{5,6}

ANTIHEPATOTOXIC STUDIES:

Eight groups (I-VIII) comprising each of the six albino rats of either sex weighing between 170-215 gm were selected. Liver damage was induced in groups II to VII by oral administration of 25% carbon

tetrachloride in liquid paraffin for 5 days orally, from sixth day onwards group III-VIII received once daily oral dose of the extract. The extract was given at a dose of 200mg/ kg in liquid paraffin. On eighth day sleep time was recorded in animals by injecting sodium pentobarbitone at a single dose of 30mg/kg body weight in distilled water, animals were scarified after the study, blood was collected in sterile centrifuge tubes and allowed to clot, serum was separated and used for the estimation of SGPT, SGOT, SALP and serum bilirubin levels.

ASSESSMENT OF LIVER FUNCTION:

After the animals were scarified, the abdomen was cut open and the liver was taken out. The ratio of wet liver weight per 100 gm of animal body weight is computed and recorded.

SGPT, SGOT, SALP and serum bilirubin levels were estimated in serum.

SGPT and SGOT levels were estimated by the method of Reitman and Frankel and expressed in Karmen Units (KU), SALP were estimated using Kind and King's method and expressed in KA units, serum bilirubin levels were estimated by Malloy and Evelyn method and expressed in mg%^{7,8,9,10}

Pentobarbitone sleep time was recorded in all the groups on the last day of the treatment. The time passed between the loss of righting reflex and its regain was taken as the sleep time and expressed in minutes^{11,12,13}.

RESULTS AND DISCUSSION:

The average percentage yields on the solvent extractions ranging from 10-15%. Table I

shows the effect of aqueous, light petroleum, chloroform, alcohol benzene and acetone extracts of *Coccinia indica* in albino rats intoxicated with CCl₄. The results of the studies were analysed by student's 't' test.

An increase in liver weight, rise in serum transaminases (SGOT, SGPT) serum alkaline phosphatase, serum bilirubin levels and Pentobarbitone sleep time were reported after CCl₄ intoxication. Increase in liver weight is due to accumulation of fat consequence to reduced rate of lipid peroxidation. High serum levels of transaminase indicate acute hepatocellular liver damage. It is evident from Table I that the liver parameters were significantly increased due to CCl₄ intoxication indicating hepatocellular liver damage.^{14,15,16}

Alcoholic extract of *Coccinia indica* could be able to reduce significantly the elevated levels SGPT (210.0 ± 16.080 to 136.2 ± 10.458 KV) SGOT (210.0 ± 9.719 to 158.3 ± 10.035 KV) SALP (212.6 to 149.2 ± 8.471 KA) and serum bilirubin (3.4 ± 0.031 mg%) it also decreased the liver weight and pentobarbitone sleep time significantly, light petroleum extract also reduced the elevated levels to some extent, other extracts were not effective in reducing the elevated levels of the liver parameters. Separation and structural Elucidation of the compound responsible for the activity is under progress.

Table I**Effect of Extracts of *Coccinia indica* on rats intoxicated with Ccl4**

Group	Liver at per 100gm Body wt. (mts) Gm Mean	SGPT (KU) Mean	SGOT (KU) Mean	SALP (KA)	Serum Bilirubin (mg%) Mean	Sleep Time (mg%) Mean
I Control	3.12 ± 0.220	52.3 ± 5.801	142.5 ± 13.061	141.4 ± 6.764	0.34 ± 0.046	52.0 ± 3.56
II Ccl4 treated	4.12 ± 0.285	260.2 ± 16.080	210.0 ± 9.719	212.6 ± 6.345	3.24 ± 0.082	192.0 ± 2.36
III ag Ext.	4.33 ± 0.256	231.3 ± 8.51	212.2 ± 9.345	214.2 ± 7.456	3.25 ± 0.034	194.0 ± 4.53
IV Light Pet.Ext.	4.03 ± 0.234	156.3 ± 17.659	168.3 ± 16.549	168.4 ± 11.559	1.34 ± 0.056	173.2 ± 3.67
V CHCl3 Ext.	4.23 ± 0.329	213.4 ± 9.767	148.2 ± 13.895	198.4 ± 8.8471	2.82 ± 0.043	189.0 ± 2.89
VI Alcoholic Ext.	4.01 ± 0.905	136.2 ± 10.458	158.3 ± 10.035	149.2 ± 8.471	0.74 ± 0.031	163.0 ± 3.34
VII Benzene Ext	4.31 ± 450	243.2 ± 8.314	184.2 ± 11.415	213.2 ± 7.314	3.07 ± 0.041	189.3 ± 4.65
VIII Acetone Ext.	4.29 ± 525	239.2 ± 13.761	193.4 ± 12.345	204.5 ± 10.415	3.06 ± 0.030	184.3 ± 4.31

Significant Reduction at P<0.001

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