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STUDIES ON HEPATOPROTECTIVE ACTIVITY OF VITEX LEUCOXYLON L.

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ABSTRACT: *Vitex leucoxylon is known to possess anti inflammatory activity. It was accidentally observed that local people of some regions use the leaves of vitex leucoxylon in jaundice and other liver ailments. There was no report of pharma-cological screening on liver. Hepatoprotective activity of the alcoholic extract of the leaves of vitex leucoxylon was found to be effective in protecting the liver from hepatotoxic substances.*

INTRODUCTION

Eight medicinally important *Vitex* species are available in India[1]. All the *Vitex* species were shown to have significant anti inflammatory activity[2]. *Vitex leucoxylon* is being used in folklore medicine for liver ailments and jaundice besides ad a remedy for joint pains, since, there was no report of its study on liver, the authors have made an attempt to study the efficacy of the drug on carbontetrachloride (CCL_4) induced liver damage in albinomice. The beneficial effect of the alcoholic extract of vitex leucoxylon leaves was assessed by determining the biochemical parameters like bilirubin[3] alkaline phosphatase (ALKP)[4], serum glutamate – oxaloacetate transminase (SGOT)[5] and serum glutamate pyruvate transminase (SGPT)[5] in serum by standard analytical methods. Bilirubin, ALKP, SGOT and GPT were taken as parameters because these correspond well with the functional status of liver, In liver damage these values were found to be enhanced and they revert to original level when the damped liver recovers.

MATERIALS AND METHODS

Toxicological studies: Up to a dose of 200 mg /kg body weight, no toxic symptoms were noticed in the animals even after 5 days.

Albino mice – BALB/C strained weighing 20-25 g of either sex were selected as experimental animals. They were divided into three groups. Group-I, Group –II and Group-III each consisting of five animals.

Group –I was kept as control, Group –II and Group –III were give 50% CCL_4 at a dose of 2 ml /kg body weight intraperitonically. Simultaneously to Group –III, the alcoholic extract of vitex leucoxylon leaves was administered orally at the dose of 500 mg/kg body weight. Blood samples of 50 U1 were collected from the tail at 0 hrs, 12hrs 24hrs 48hrs and 72 hrs. then it was diluted with 450ul of phosphate buffer saline (1/10 dilution) the plasma was separated by centrifuging at 2500-3000 rpm for five minutes and bilirubin ALKP, SGOT and SGPT were estimated by using standard methods with pharmacia Ultrospec – II.

Results and Discussion

In our experiment the serum total bilirubin levels in normal albino-mice Group I recorded at different time intervals beginning from 072 hrs was found to be within normal limits (Table1) indicating that the function of liver was normal. In Group – II where the liver was damaged with a 40 µl dose of $CC1_4$ revealed that there was a progressive increase in serum bilirubin level right from 12 hrs to 72 hrs suggesting that hepatic function was deranged, i.e the ability of the liver to excrete secondary metabolites of endogenous substances was distorted. In group-III, when the drug (10 mg per mice) with $CC1_4$ induced dose (40 µl per mice) and the subsequent estimation of the bilirubin revealed that the serum bilirubin level ea significantly lowered in comparison to group-ii indicating that the alcoholic extract of *Vitex leucoxylon* leaves had a positive protective role in restoring the deranged function of the liver.

Similarly the progressive increase in the level of alkaline hepatic enzymes such as ALKP (Table 2) SGOT (Table 3) and SGPT (Table 4) in the group –II experimental models at 24hrs to 48hrs in comparison to control was suggestive of hepatocyte injury by the $CC1_4$. The significant decrease in the serum levels of these enzymes in group-III as compared to Group –II reflects the restoration of the normal functions of the hepatocytes.

Thus, the drug was found effective in restoring the deranged liver function in animal experimentation. However, the action is to be proved by clinical trials.

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Table -1
Effect of alcoholic extract of *Vitex leucoxylon* leaf in bilirubin levels (IU/I) against acute damage Produced by $CC1_4$ in albino mice (Mean ± S.D, n=5)

Test	0hr	12hr	24hr	48hr	72hr
Group -I Vehicle (V)	0.37± 0.10	0.32 ±0.07	0.35 ±0.11	0.36 ±0.14	0.37 ±0.05
Group -1I V+$CC1_4$	0.34 ±0.06	0.54 ±0.11	1.13 ±0.25*	1.64 ±0.44*	1.27 ±0.17*
Group -1II V+$CC1_4$ + Leaf extract	0.39 ±0.05	0.44 ±0.05	1.0 ±0.22*	0.86 ±0.46*	0.98 ±0.13*

*P≤ 0.01 # P≤ 0.05

Table -2
Effect of alcoholic extract of *Vitex leucoxylon* leaf in Alkaline phosphatase levels (IU/I) against acute damage Produced by $CC1_4$ in albino mice (Mean ± S.D, n=5)

Test	0hr	12hr	24hr	48hr	72hr
Group -I Vehicle (V)	61.8±12.5	66.8 ±10.6	62.8± 7.46	62.8 ±8.86	60.6 ±8.44
Group -1I V+$CC1_4$	63.6 ±9.55	70.4 ±12.09	148.2± 0.36*	227.8 ±49.5*	152.0 ±15.4*
Group -1II V+$CC1_4$ + Leaf extract	61.6 ±9.07	68.2 ±11.9	106.2 ±24.6*	198.2 ±23.3*	119.2 ±13.55*

*P≤ 0.01

Table -3
Effect of alcoholic extract of *Vitex leucoxylon* leaf in SGOT levels (IU/I) against acute damage Produced by $CC1_4$ in albino mice (Mean ± S.D, n=5)

Test	0hr	12hr	24hr	48hr	72hr
Group -I Vehicle (V)	11.2± 7.29	11.8± 7.85	15.4 ±7.02	16.6 ±8.61	16.6 ±5.59
Group -1I V+$CC1_4$	18.2± 7.04	22.6 ±6.14	28.0 ±8.63#	35.6± 8.90*	28.2 ±0.13#
Group -1II V+$CC1_4$ + Leaf extract	16.4 ±5.59	15.0 ±4.52	20.2± 8.05#	25.5± 6.30#	18.8 ±7.32

*P≤ 0.01 # P≤ 0.05

Table -4
Effect of alcoholic extract of *Vitex leucoxylon* leaf in SGOT levels (IU/I) against acute damage Produced by $CC1_4$ in albino mice (Mean ± S.D, n=5)

Test	0hr	12hr	24hr	48hr	72hr
Group -I Vehicle (V)	23.0 ± 9.13	23.0 ± 9.13	27.4 ± 5.59	28.6 ± 8.26	31.4 ± 7.50
Group -1I V+$CC1_4$	24.2 ± 9.52	39.2 ± 12.94	58.4 ± 9.04	70.2 ± 10.76	52.0 ± 8.21
Group -1II V+$CC1_4$ + Leaf extract	20.0 ± 6.96	28.2 ± 5.97	38.6 ± 5.59*	43.6 ± 9.01*	3434 ± 5.63

*P≤ 0.01

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