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Hepato-Protective activity of *Moringa oleifera* Lam Leaves 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 methanolic and chloroform extract of *moringa oleifera* leaves are evaluated in CCl_4-induced hepatotoxicity in albino rats. Silymarin (200mg/kg) was given as reference standard. The methanolic and chloroform extracts of leaves of *moringa oleifera* 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: Moringa oleifera, hepatotoxicity, Drumstick

INTRODUCTION

Liver disease remains one of the serious health problems. Herbs play a major role in the management of various liver disorders. A number of plants possess hepatoprotective property [1]. *Moringa oleifera* Lam (Moringaceae) commonly known as drumstick, is used in Indian folk medicine for the treatment of various illness. The leaves are in rich in Vitamins A and C and Considered useful in scurvy [2]. The flowers reported to contain quercetin and kempferol and used as uterus tonic [2]. The pods and leaves contain Vitamin A, B, E and C. They contain eight essential amino acids [2, 4, 5].The flowers reported to contain quercetin and kempferol [2].

MATERIALS AND METHODS

Plant material

The plant material used in this study was collected during January 2005 in Chidambaram, a rural town of Tamilnadu, India and authenticated by herbarium staff of Department of Botany, Annamalai University in Chidambaram. A voucher specimen has been deposited at the herbarium of the department of pharmacognosy, Annamalai University in Chidambaram, Tamilnadu, India.

Preparation of the Extract

The shade dried leaves of *Moringa oleifera* Lam was extracted with chloroform and methanol successively by soxhlation method for 6 hours. Filtered, concentrated over water bath and evaporated under reduced pressure. The yields of methanolic extract (yield 7.4%) and chloroform extract (yield 8.6%) 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.

Hepatoprotective Activity

The animals were divided into five groups comprising of six albino rats in each group using randomization technique and treated with the extract for seven days to assess the hepato-protective 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 CCl_4 treatment. The third group received methanol extract in the dose of 500mg/kg p.o. and the fourth group received the chloroform extract in the dose of 500mg/kg p.o. The fifth 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 CCl_4 on 5^{th} day of the treatment. The animals were sacrificed by cervical dislocation after 48hours of CCl_4 administration. The blood samples were collected by cardiac puncture in heparinized microfuge tubes. The blood samples thus collected were immediately centrifuged at 2500rpm for 15 minutes. When serum clearly separated out, the serum is analyzed for SGPT and SGOT levels using enzopak reagent kits by the method proposed by Reitman and Frankel [10]. The

Table: 1 Effect of methanolic and chloroform extracts of moringa oleifera leaves on CCl_4-induced hepatotoxicity

Group	Total Bilirubin [a] (mg/dl)	Direct Bilirubin [a] (mg/dl)	SGPT (Units/ml) [a]	SGOT (Units/ml) [a]
Control	0.94±0.27	0.76±0.14	56.01±1.58	59.40±4.51
CCl4	7.05±0.66*	3.21±0.05*	114.40±2.03*	131.0±2.96*
Methanolic Extract (500mg/kg)	1.08±0.28*	1.17±0.06*	42.57±1.03*	51.0±0.68*
Chloroform Extract (500mg/kg)	1.22±0.27*	1.22±0.06*	54.51±1.59*	56±1.24*
Silymarin (200mg/kg)	1.22±0.13*	1.24±0.05*	38.76±1.32*	52.0±1.28*

[a] *Values of mean ± S.E.M. (n=6)*

** P < 0.01 vs. control, Student't' test*

results thus obtained were subjected to statistical analysis using student t-test and analysis of variance (Table: 1)

RESULTS AND DISCUSSION

The methanolic and chloroform extracts of leaves of *moringa oleifera* have shown very significant hepatoprotection against CCl_4-induced hepatotoxicity in albino rats in reducing Serum total bilirubin, direct bilirubin, SGPT and SGOT levels. Liver section of moringa oleifera treated animal group clearly showed normal hepatic cells and central vein thereby confirming hepatoprotective activity.

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