International Journal of PharmTech Research
CODEN (USA): IJPRIF ISSN : 0974-4304
Vol.3, No.4, pp 1916-1918, Oct-Dec 2011

# Hepatoprotective activity of alcoholic extract of the species *Sarcostemma secamone*

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**Abstract:** Alcoholic extract of Sanostemma secamone has been evaluated for its hepatoprotective activity. The alcoholic extract of Sarcostemma secamone showed remarkable hepatopatoprotective activity against $CCl_4$ induced hepatotoxicity. The activity was evaluated by using biochemical parameters such as serumaspartate aminotransferase (AST), , alanine aminotransferase (ALT), alkaline phosphatase, total bilirubin and γ - Glutamate transpeptidase (GLTP).
**Keywords :** SS, $CCl_4$, Serum enzymes.

## Introduction:

Liver diseases are the major medical problems faced by all over the world. They can be caused by variety of agents, the most frequent being viruses, parasites and toxins. Most of the hepatotoxic chemicals damage liver cells mainly by inducing lipid peroxidation and other oxidative damages in liver.

Inspite of the tremendous advances made in allopathic medicines, no effective hepatoprotective medicine is available. Plant drugs are known to play a vital role in the management of liver diseases. There are numerous plants and polyherbal formulations claimed to have hepatoprotective activities. Nearly, 150 phyto constituents from 101 plants have been claimed to possess liver protecting activity[2]

At the same time, surprisingly we donot have readily available satisfactory plant drugs / formulations to treat severe liver diseases. Most of the studies on hepatoprotective plants were carried out using chemical induced liver damage in rodents *Sarcostemma secamone* belongs to family asclepiadaceae have been used by various practitioners for the treatment of hepatic ailments. So, the present study is focused to findout the hepatoprotective potential of ethanolic extract of *sarcostemma secamone* against $CCl_4$ induced hepatotoxicity.

## Materials and methods :

Male wistar rats weighing between 150 -175 g were used, the animals were maintained in the college animal House under standard laboratory condition with commercial pellet diet and water ad libitum.

Rats were divided into four groups each group consisting of six animals. The Hepatoprotective activity of *Sarcostemma secamone* was evaluated using $CCl_4$ induced model[3] Group I was kept on normal diet and served as control the second group

received $CCl_4$ (1.25 ml/kg) by the oral route, the third and Fourth Groups received silymarin (100mg /kg) and ethanolic extract of *Sarcostemma secamone* (200mg /kg) respectively once daily for 7 days, In the seventh day $CCl_4$ was given by the oral route 30 mts after the administration of silymarin and test drug. After 36 hr of $CCl_4$ administration blood was collected and separated serum was analysed for various biochemical parameters like serum glutamate oxaloacetate transaminase (SGOT)[4] serum glutamate pyruvate transaminase (SGPT), alkaline phosphatase[5], total Bilirubin[6], protein[7] and γ-glutamate transpeptidase (GGTP)[8] the livers were examined grossly and weighed.

## Results and Discussion

The Result of Biochemical Parameters, revealed the elevation of enzyme levels in the CCl4 - treated groups, indicating that CCl4 induces damage to the liver (Table) liver tissues rich in both transamineses increase in patients with acute hepatic diseases. SGPT, which is slightly elevated in cardiac necrosis is a more specific indicator of liver diseases. A significatnt reduction was observed ($P<0.001$) in SGPT, SGOT, ALP, Total Bilirubin, GGTP and increased Protein level in the groups treated with Silymarin and the alcoholic extract of *Sarcostemma Secamone*. The enzyme levels were nearly restored to the normal level. It was observed that the liver was enlarged in CCl4 - intoxicated rats but it was normal in drug treated groups. A significant reduction ($P<0.001$) in liver weight support this finding.

**CCl4** is one of the most commonly used hepatotoxins in the experimental study of liver diseases. The hepatotoxic effect of CCl4 are largely due to its active metabolite trichloromethy radical . these activated radicals bind covalently to the macromolecules and induce peroxidative degradation of membrane lipids of endoplasmic reticulum rich in poly unsaturated fatty acids. This lead to formation of lipid peroxides. This lipid peroxidative degradation of biomembrane is one of the principle cause of hepatotoxicity of CCl4 .

This is evidended by an elevation in the serum marker enzymes namely SGOT, SGPT, ALP, total bilirubin, GGTP and decrease in protein.

The efficacy of any hepatoprotective drug. is dependent on its capacity of either reducing the harmful effect or restoring the normal hepatic physiology that has been disturbed by a hepatotoxin.

The silymarin and the alcoholic extract of the plant decreased the $CCl_4$ – induced elevated levels of the enzymes in group III and IV, indicating the protection of structural integrity of hepatocytic cell membrane or regeneration of damaged lives cells by the extract.

Decrease in serum bilirubin after treatment with the ethanolic extract of the *sarcostemma secamone* in $CCl_4$ intoxicated rats indicated the effectiveness of the extract in normal functional status of the liver.

**Table: Hepatoprotective activity of alcoholic extract of *Sarcostemma secamone***

| Treatment | Dose/ mg/kg | SGPT v/l | SGOT v/l | ALP v/l | Total Bilirubin mg% | Protein g% | GGTP v/l |
|---|---|---|---|---|---|---|---|
| Control | --- | 138 ± 2.8 | 52 ± 0.8 | 160 ± 0.2 | 0.8 ± 0.2 | 7.2 ± 0.8 | 134 ± 3.0 |
| $CCl_4$ | 1.25 mg/kg | 272 ± 6.2 | 186 ± 7.6 | 322 ± 4.8 | 0.3 ± 0.08 | 6.0 ± 1.0 | 188 ± 4.0 |
| Silymarin+ $CCl_4$ | 100 mg/kg | 149 ± 5.4 | 68 ± 1.8 | 208 ± 6.4 | 1.2 ± 0.08 | 6.2 ± 0.8 | 140 ± 6.8 |
| Alcoholic Extract of Sarcostemma Secamone + $CCl_4$ | 200 mg/kg | 161 ± 2.0 | 71 ± 4.6 | 220 ± 6.0 | 1.8 ± 0.06 | 6.2 ± 0.6 | 146 ± 1.2 |

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