International Journal of Medical and Health Research

Volume: 1, Issue: 1, 15-18
Sep 2015
www.medicalsjournals.com
ISSN: 2454-9142

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Hepato-Protective Herbs- Present In West Godavari District Of Andhra Pradesh, India- A Mini Review

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Abstract
Liver diseases are being considered as very fatal in India and across the world. As the modern medicines have various limitations people eyeing on the herbal drugs to cure cold to fatal diseases. The modern medicines which are being used for hepatic diseases have hazardous effects on the different systems in the body. Inorder to reduce these effects a lot of studies have been conducted on Medicinal herbs for hepato protective properties. A review has been done on the medicinal herbs which possess hepato protective properties that are present in the west godavari district of Andhra Pradesh, India.

Keywords: Liver, fatal, hepatic, Medicinal herbs.

1. Introduction
Liver diseases have become one of the major causes of morbidity and mortality in man and animals all over globe and hepatotoxicity due to drugs appears to be the most common contributing factor [1]. Hepatitis can be caused by drugs, viruses, bacteria, mushrooms, parasites like amoebas or giardiasis [2]. Due to excessive exposure to hazardous chemicals, sometimes the free radicals generated are so high that they overpower the natural defensive system leading to hepatic damage and cause jaundice, cirrhosis and fatty liver [3]. Production of the reactive species depletion manifests in tissue thiol depletion, lipid peroxidation, plasma membrane damage etc., culminating into severe hepatic injury [4].Treatment options for common liver diseases such as cirrhosis, fatty liver and chronic hepatitis are problematic [5]. Herbs are the great source of phytochemicals have capacity to eliminate the diseases from cold to fatal diseases. The best source of drugs without hazardous effect to human systemscould be the plant source and this has been proved by the Traditional healing system and the recent studies conducted on the experimental animals. As the hepatocytes are the sites of detoxification, diseases caused to this detoxifying cells need to be looked seriously. Even expansion of modern medicines throughout the India people in rural areas still uses this wonder Herbal medications to liver diseases such as Hepatitis from Traditional Healers. Liver protective plants contain a variety of chemical constituents like phenols, coumarins, lignans, essential oil, monoterpenes, carotinoids, glycosides, flavanoids, organic acids, lipids, alkaloids and xanthenes [6].

Hepato-Protective Herbs
Andrographis paniculata (Acanthaceae)
The local name of *Andrographis paniculata* is Nelavema. Antihepatotoxic activity of the Andrographis paniculata methanolic extract (equivalent to 100 mg/kg of andrographolide) and 761.33 mg/kg ip, of the andrographolide-free methanolic extract (equivalent to861.33 mg/kg of the methanolic extract) of the plant, using CCl4-intoxicated rats. Biochemical parameters like serum transaminases--GOT and GPT, serum alkaline phosphatase, serum bilirubin and hepatic triglycerides were estimated to assess the liver function. The results suggest that andrographolide is the major active antihepatotoxic principle present in *A. paniculata* [7].

Azadirachta indica (Meliaceae)
The local name of *Azadirachta indica* is Vepa. Effect of A. indica leafextract on serum enzyme levels (glutamate oxaloacetate transaminase, glutamate pyruvate transaminase, acid

phosphatase and alkaline phosphatase) elevated by paracetamol in rats was studied with a view to observe any possible hepatoprotective effect of this plant. It is stipulated that the extract treated group was protected from hepatic cell damage caused by paracetamol induction. The findings were further confirmed by histopathological study of liver.The antihepatotoxic action of picroliv seems likely due to an alteration in the biotransformation of the toxic substances resulting in decreased formation of reactive metabolites [8].

Eclipta alba (Asteraceae)
The local name of *Eclipta alba* is Gantalagaraku. The hepatoprotective effect of the ethanol/water (1:1) extract of Eclipta Albawas studied at subcellular levels in rats against (CCl4) -induced hepatotoxicity. The loss of hepatic lysomal acid phosphatase and alkaline phosphatase by (CCl4) was significantly restored by *Eclipta Alba*. The study shows that hepatoprotective activity of Eclipta Alba is by regulating the levels of hepatic microsomal drug metabolising enzymes [9].

Phyllanthus emblica (Euphorbiaceae)
The local name of *Phyllanthus emblica* is Usiri. Ethanol extract of Phyllanthus emblica Linn. (PE) induced rat hepatic injury. PE (0.5 and 1 mg/ml) increased cell viability of rat primary cultured hepatocytes being treated with ethanol (96 µl/m) by increasing % MTT and decreasing the release of transaminase. Pretreatment of rats with PE at oral dose of25, 50 and 75 mg/kg or SL (silymarin, a reference hepatoprotective agent) at 5 mg/kg, 4 h before ethanol lowered the ethanol induced levels of AST, ALT and IL-1beta. The 75 mg/kg PE dose gave the best result similar to SL. Treatment of rats with PE (75 mg/kg/day) or SL (5 mg/kg/day) for 7 days after 21 days with ethanol (4 g/kg/day, p.o.) enhanced liver cell recovery by bringing the levels of AST, ALT, IL-1beta back to normal [10].

Phyllanthus reticulates (Euphorbiaceae)
The local name of *Phyllanthus reticulates* is Nallapulimokka.Two partially purified organic fractions designated by PR1 and PR2 of the fat free ethanol (95%) extract of aerial parts of Phyllanthus reticulatus, were tested for the hepatoprotective activity in rats against CCl(4)-induced liver damage. The rats receiving the fractions showed promising hepatoprotective activity as evident from significant changes of pentobarbital-induced sleeping time, changes in serum levels of sGPT, sGOT, sALP and bilirubin and also from histopathological changes as compared to CCl(4)-intoxicated rats [11].

Pterocarpus santalinus (Fabaceae)
The local name of *Pterocarpus santalinus* is Errachandanam.The aqueous (45 mg/ml) and ethanol (30 mg/ml) extracts of Pterocarpus santalinus stem bark in 1% gum tragacanth was administered orally for 14 days and the hepatoprotective activity studied in CCl4 induced hepatic damage model. There was a significant increase in serum levels of bilirubin, alanine transaminase, aspartate transaminase and alkaline phosphatase with a decrease in total protein level, in the CCl4 treated animals, reflecting liver injury. In the extracts treated animals there was a decrease in serum levels of the markers and significant increase in total protein, indicating the recovery of hepatic cells. Ethanol extract treated animal's revealed normal hepatic cords without any cellular necrosis and fatty infiltration [12].

Ptrospermum acerifolium (Sterculiaceae)
The local name of *Ptrospermum acerifolium* is Kanakachampa. The hepatoprotective activity of the ethanol extract of the leaf of Ptrospermum acerifolium was investigated in rats. Hepatotoxicity was induced in male Wistar rats by intraperitoneal injection of carbon tetrachloride (0.1 ml/kg/d p.o. for 14 d). Ethanol extract of P. acerifolium leaves were administered to the experimental rats (25 mg/kg/d p.o. for 14d). The Hepatoprotective effect of these extracts was evaluated by liver function biochemical parameters (total bilirubin, serum protein, alanine aminotransaminase, asparatate aminotransaminase and alkaline phosphates activites) and histopathological studies of liver. In ethanol extract treated animals, the toxicity effect of carbon tetrachloride was controlled significantly by restoration of the levels of serum bilirubin and enzymes as compared to the normal and standard drug silymarin-treated groups [13].

Cleome viscosa (Capparidaceae)
The local name of *Cleome viscosa* is Vaminta. The hepatoprotective activity of the Cleome viscosa Linn (Capparidaceae) extract was assessed in CCI 4 induced hepatotoxic rats The test material was found effective as hepatoprotective, through in vivo and histopathological studies. The extract was found to be effective in shortening the thiopental induced sleep in mice poisoned with CCl 4. The hepatoprotective effect of ethanolic extract was comparable to that of silymarin, a standard hepatoprotective agent [14].

Piper longum (Piperaceae)
The local name of *Piper longum* is Pippallu. The biochemical basis and mechanism of hepatoprotective action of Piper longum milk extract, is not scientifically studied. Thus, the present study was designed to investigate the hepatoprotective activity of Piper longum milk extract. Carbon tetrachloride (CCU) was used as a hepatotoxin at a dose of 0.5 ml/kg p. o. with olive oil (1:1) thrice a week for 21 days to produce the chronic reversible type of liver necrosis. Following treatment with Piper longum milk extract (200 mg/day p. o. for 21 days), a significant hepatoprotective effect was observed in CCU induced hepatic damage as evident from decreased level of serum enzymes, total bilirubin and direct bilirubin. The hepatoprotective effect of Piper longum is comparable to the standard drug silymarin (25 mg/kg/day p. o. for21 days) [15].

Ficus carica (Moraceae)
The local name of *Ficus carica* is Medipandu. Shade dried leaves of Ficus carica were extracted using petroleum ether (60-80 °C) and tested for antihepatotoxic activity on rats treated with 50 mg/ kg of rifampicin orally. The parameters assessed were serum levels of glutamic oxaloacetate transaminase, glutamic pyruvic transaminase, bilirubin and histological changes in liver. Liver weights and pentobarbitone sleeping time as a functional parameter were also monitored. There was significant reversal of biochemical, histological and functional changes induced by rifampicin treatment in rats by petroleum ether extract treatment, indicating promising hepatoprotective activity [16].

Vitex trifolia (Lamiaceae)
The local name of *Vitex trifolia* is Neruvaavili.Aqueous and ethanol extract of leaf of *Vitex trifolia* was investigated for hepatoprotective activity against carbon tetrachloride induced liver damage. To assess the hepatoprotective activity of the extracts, various biochemical parameters *viz*. total bilirubin, total protein, alanine transaminase, aspartate transaminase and

alkaline phosphatase activities were determined. Results of the serum biochemical estimations revealed significant reduction in total bilirubin and serum marker enzymes and increase in total protein in the animals treated with ethanol and aqueous extracts. However significant rise in these serum enzymes and decrease in total protein level was noticed in CC14 treated group indicating the hepatic damage. The hepatoprotective activity also supported by histological studies of liver tissue. Histology of the liver tissue treated with ethanol and aqueous extracts showed normal hepatic architecture with few fatty lobules. Hence the present study revealed that Vitex trifolia could afford significant protection against CCU induced hepatocellular injury [17].

Tylophora indica (Asclepiadaceae)

The local name of *Tylophora indica* is Verripala. The methanolic extract of Tylophora indica leaves was screened for hepatoprotective activity in carbon tetrachloride induced hepatotoxicity in albino rats. The degree of protection was measured by estimating biochemical parameters like Serum glutamate oxaloacetate transaminase, serum glutamate pyruvate transaminase, total protein and level of serum bilirubin (both total and direct). Hepatoprotective activity of methanolic extract at a dose of 200 mg/kg and 300 mg.kg body weight, i.p. was compared with Silymarin (25 mg/kg,i.p.) treated animals Tylophora indica leaves (200 and 300 mg/kg) exhibited significant reduction in serum hepatic enzymes when compared to rats treated with carbon tetrachloride alone. Furthermore, histopathological studies were also done to support the study [18].

Calotropis procera (Asclepidaceae)

The local name of Calotropis procera is Kakijilledu. Hydro-ethanolic extract (70 %) of *Calotropis procera* flowers was prepared and tested for its hepatoprotective effect against paracetamol-induced hepatitis in rats. Alternation in the levels of biochemical markers of hepatic damage like SGPT, SCOT, and ALP, bilirubin, cholesterol, HDL and tissue GSH were tested in both treated and untreated groups. Paracetamol (2 g/kg) has enhanced the SGPT, SGOT, ALP, bilirubin and cholesterol levels and reduced the serum levels of HDL and tissue level of GSH. Treatment with hydro-ethanolic extract of C. procera flowers (200 mg/kg and 400 mg/kg) has brought back the altered levels of biochemical markers to the near normal levels in the dose dependent manner [19].

Table 1: Shows the Plants having Hepato protective activity and their local name and active phytochemicals.

Plant Name	Family	Local Name	Phytochemical	Reference
Armillaria tabescens	Physalacriaceae	Marri chettu	Coumarin	20
Artemesiae capillaries	Anthemideae	Davanamu	Coumarin	21
Aloe barbadensis	Liliaceae	Kalabanda	Glycosides	22
Acacia catechu	Fabaceae	Chandra chettu	Flavonoids	23
Amaranthus spinosus	Amaranthaceae	Mullathotakura	flavonoids and phenolics	24
Anethum graveolens	Apiaceae	Sompa	Essential oil	25
Cassia occidentals	Fabaceae	Kasintha	Flavonoids	26
Calotropis gigantean	Asclepediaceae	Kaki jilledu	Flavonoids	27
Cichorium intybus	Asteraceae	Kasini	Phenols	28, 29
Murraya koenigii	Rutaceae	Karivepaaku	Monoterpens	30
Picrorrhiza kurroa	Scrophulariaceae	Katuka rohini	Phenols	31
Pergularia daemia	Asclepiadaceae	Dusthapuchettu	Flavonoids	32
Syzygium aromaticum	Myrtaceae	Lavangam	Phenols	33

Conclusion

Liver diseases are being considered very fatal. Beacause of the fatality causing by liver diseases there is an emergency in finding effective herbal medications because of lack of hazardous effects on the human systems unlike the synthetic modern medicines. Traditional healing system has provided many important herbs have the potential to cure lethal diseases. This review would be useful for the scientific community to do much more work to find herbal based efficient drugs against livers diseases.

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