



Liver Tonic / Hepatoprotectives

Beyond the treatment of liver disorders, everyday care of the liver lays a cornerstone for total body health. Naturopaths and others, who look beneath the symptoms of an illness to its underlying cause, often discover that the liver has had a role to play. More than 500 vital functions have been identified with the liver. The liver is important because a person's nutritional level is not only determined by what he or she eats, but by what the liver processes. Unfortunately it is extremely difficult to detect early warning symptoms specific to liver metabolic imbalances. People can suffer for a long time from a liver ailment without knowing of it. The incredible complexity of liver chemistry and its fundamental role in human physiology is so daunting to researchers that the thought that simple plant remedies might have something to offer is astonishing and incredible!

Here leads to invention of Liver tonics, which perform function of protecting the liver against toxins, poisons and pathogens, stimulates regeneration of liver cells, protects against inflammation. After extensive search of the modern and traditional literature on this subject we are proud to present a range of safe herbal alternatives from India that can serve as an excellent hepatoprotectives if consumed as per directions.

Cichorium intybus

Cichorium intybus commonly known as Chicory is an indigenous perennial herb well reputed ancient Indian medicine as a liver tonic. Accordingly it has been used as ayurvedic medicine for gall and liver disturbances. It forms an important component of several important liver preparations in India.

In preclinical studies an alcoholic extract of the *Cichorium intybus* was found to be effective against chlorpromazine-induced hepatic damage in adult albino rats.

Extracts of *Cichorium intybus* were screened for their ability to protect the CCl₄ and paracetamol intoxicated liver in rats and were found to possess significant antihepatotoxic properties. Study done by using ethanol extract of *Cichorium intybus* in dose of 300 mg/kg showed significant increase in circulating leukocytes and relative weights of liver, as compared with alcohol alone which provides the evidence for liver protective effects of the herb.

Tinospora cordifolia

Tinospora cordifolia commonly known as Guduchi is one of the most valuable medicinal herbs of ayurveda. According to the Ayurvedic lexicons *Tinospora cordifolia* is referred to as 'Amrita'. The term 'Amrita' is attributed to this drug in recognition of its ability to

impart youthfulness, vitality and longevity to its patron. In modern medicine it is well known for its hepatoprotective, adaptogenic and immunomodulatory activities.

Clinical studies in twenty patients of infective hepatitis showed that Guduchi plays an important role in relieving the symptoms as well as normalization of altered liver functions. The majority of cases i.e. 15 cases (75 %) were cured and 5 cases (25%) improved after treatment with *Tinospora cordifolia*.

Currently along with antibiotics and supportive intensive care management, immunotherapy with *Tinospora cordifolia* (Tc) is practised in surgical units. This therapy has shown to boost host defenses and decrease the incidence of septicaemia, resulting in increased survival of patients. In experimental rats *Tinospora cordifolia* (100mg/kg/d for 5 weeks) was found to decrease the renal damage, improve the fibrinogen level, and reduce lead acetate induced endotoxaemia. *Tinospora cordifolia* was also found to decrease renal ischaemia induced mortality to 36 percent. The prognosis following *Tinospora cordifolia* (Tc) appears to be due to protection against all the risk factors.

Kupffer cells are major determinants of outcome of liver injury. Their activity was therefore studied in a model of chronic liver disease. The effect of *Tinospora cordifolia*, with proven hepatoprotective activity, was evaluated on Kupffer cell function, using carbon clearance test as a parameter. Antihepatotoxic activity of *Tinospora cordifolia* was studied in albino rats intoxicated with CCl₄. Liver function was assessed based on morphological, biochemical (SGPT, SGOT, Serum alkaline phosphatase, Serum bilirubin) and functional (Pentobarbitone sleep time) tests. Efficacy of *Tinospora cordifolia* as a sole constituent in goats liver were studied. Results revealed clinical and hematobiochemical improvement at the later stages in *Tinospora cordifolia* treated goats, indicating that it has got hepatoprotective action.

Wedelia

calendulacea

Bhangra scientifically known as *Wedelia calendulacea*, belonging to Compositae family is a perennial herb, with light camphor-like odor. The plant is traditionally used as a tonic, for hepatic and splenic enlargement, and in skin diseases. Historic use of *Wedelia calendulacea* as liver tonic is scientifically confirmed.

Preclinical Studies demonstrate its protective action in paracetamol induced liver damage by increasing serum enzyme levels (lactate dehydrogenase, alanine and aspartate transaminase and alkaline phosphatase). The alcoholic extract of whole plant *Wedelia calendulacea* exhibited protective activity against carbon tetrachloride-induced liver injury in vivo. The extract also increased the bile flow in rats suggesting a stimulation of liver secretory capacity. The minimum lethal dose was greater than 200 mg/kg p.o. in mice.

Boerhavia

diffusa

The roots of *Boerhavia diffusa*, commonly known as 'Punarnava', are used by a large number of tribes in India for the treatment of various hepatic disorders and for internal inflammation. Anodectal data has also reported effectiveness of *Boerhavia diffusa* incases of oedema and ascites resulting from early cirrhosis of the liver and chronic peritonitis.

In scientific studies the chloroform and methanolic extracts of the roots and aerial parts of *Boerhavia diffusa* exhibited hepatoprotective activity against carbontetrachloride

intoxication in experimental rats. A proprietary hepatotonic herbal formulation containing *Boerhavia diffusa* as one of the major ingredient offered significant protection against decrease in haemoglobin percentage R.B.C. and W.B.C counts and the various liver microsomal enzymes.

Andrographis paniculata

King of Bitters botanically known as *Andrographis paniculata* is an ancient Indian medicinal herb, which has been used for centuries in Asia for its effects on various bodily functions and ailments, ranging from degenerative diseases to the common cold. It is known as Kalmegh and is used as a bitter ingredient in the Indian indigenous system of medicine. The leaves contain andrographolide, most active component of *Andrographis paniculata* is very bitter in taste.

One the most common therapeutic potential of *Andrographis paniculata* is its liver protective property, which is well established experimentally. Alcoholic extract of the leaves of *Andrographis paniculata* was found to be effective in prevention of liver damage.

In another study administration of *Andrographis paniculata* exhibited liver protective effects by enhancing activity of antioxidant enzymes like superoxide dismutase, catalase, glutathione peroxidase, glutathione reductase along with the level of glutathione and decreasing the activity of lipid peroxidase which leads to generation of free radicals damaging the liver cells. Thus by means of its synergistic effects *Andrographis paniculata* exerts its well-known hepatoprotective action.

Phyllanthus niruri

Syn: *Phyllanthus amarus*

Bhuiamalaki, botanically known as *Phyllanthus niruri* is a member of Euphorbiaceae family. The decoction of the plant has historically been used in jaundice.

In a preliminary study, carriers of hepatitis B virus were treated with a preparation of the plant *Phyllanthus niruri* for 30 days. 22 of 37 (59%) treated patients had lost hepatitis B surface antigen when tested 15-20 days after the end of the treatment compared with only 1 of 23 (4%) placebo-treated controls. Some subjects have been followed for up to 9 months. In no case has the surface antigen returned. Studies also revealed that *Phyllanthus niruri* exhibits antiviral actions on Hepatitis B in human subjects and in vitro.

Preclinical studies demonstrate that an extract of the *Phyllanthus niruri* plant inhibits endogenous DNA polymerase of hepatitis B virus and binds to the surface antigen of hepatitis B virus. Extracts of *Phyllanthus niruri* have been shown to exert hepatoprotective effect against carbon tetrachloride induced liver cell damage in rabbits. Pre-treatment with extract of *Phyllanthus niruri*, reduced paracetamol-induced acute liver damage in rats as monitored by estimating the serum transaminases (SGOT and SGPT), bilirubin and histopathological changes in the livers.

Tephrosia purpurea

Tephrosia purpurea locally known as Sarapunkha, forms one of the most effective ingredients of formulations available in Indian market for liver ailments. In the traditional Indian medicine it is famous for its effectiveness in bilious febrile attacks, obstruction of liver and spleen apart. Notably it has shown good results in cirrhosis and viral hepatitis in clinical trials (human studies).

Dried extract of tephrosia purpurea was studied for its efficacy using both acute and chronic models of experimentally induced hepatotoxicity

Extensive data from preclinical studies in acute and chronic hepatotoxic models have revealed that mechanism of hepatoprotection by Tephrosia purpurea mainly involves membrane stabilization of liver cells as indicated by decrease in levels of SGOT, SGPT and bilirubin. Wherein it prevents cellular leakage and loss of functional integrity of the liver cell membranes caused by various hepatotoxic agents. Tephrosia purpurea also leads to increase in hepatic regeneration, which again contributes to its hepatoprotective efficacy.

Salacia reticulata

Salacia reticulata is a member of Hippocrateaceae family climbing shrub with blackish branches. The roots are traditionally used in treatment of gonorrhoea, itches, swelling, diabetes and liver tonic.

The hepatoprotective effects extracts from the roots and stems of Salacia reticulata were examined using an oxidative stress-induced liver injury model. Both extracts significantly suppressed the increase in glutamic oxaloacetic transaminase and glutamic pyruvic transaminase activities in carbon tetrachloride (CCl₄)-treated mice. These extracts also inhibited CCl₄-induced thiobarbituric acid-reactive substance formation, which indicates increased lipid peroxidation in the liver. These results suggest that the antioxidative activity is involved in the hepatoprotective activity of S. reticulata.

CONTACT US

Dr. Ilangoan Ramasamy, B.S. (Zoology), B.S.(Ag), M.S.(Ag), Ph.D. (Ag)

AgriInfoTech, Inc. 166 Lawrence Road, Salem NH-USA 03079

Ph: 603-894-7346, 603-781-9097

WWW.AGRIINFOTECH.COM