

## An Ayurvedic Herbal Approach To A Healthy Liver

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**ABSTRACT:** *The liver plays an astonishing array of vital functions in the maintenance and performance of the body. Some of these major functions include carbohydrate, protein, and fat metabolism, detoxification, and secretion of bile. Therefore, the maintenance of a healthy liver is vital to overall health and well being. Unfortunately, the liver is often abused by environmental toxins, poor eating habits, alcohol, and prescription and over-the-counter drug use, which can damage and weaken the liver and eventually*

*lead to hepatitis, cirrhosis, and alcoholic liver disease. Conventional medicine is now pursuing the use of natural products such as herbs to provide the support that the liver needs on a daily basis. Many Ayurvedic herbs, such as andrographis, have a long history of traditional use in revitalizing the liver and treating liver dysfunction and disease. Many of these herbs have been evaluated in clinical studies and are currently being investigated phytochemically to better understand their actions.*

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### OPTIMAL LIVER FUNCTION - THE KEY TO TOTAL INTEGRATION OF BODY SYSTEMS

Through a vast network of biochemical reactions, the liver controls a major portion of the body's internal environment. Some of its major functions include carbohydrate, fat, and

protein metabolism; formation and storage of vitamins and minerals; conjugation and excretion of steroid hormones; and detoxification of drugs and other toxins (see Table 1). Owing to its many roles, the liver impacts normal human growth and development, fertility, cardiovascular maintenance, and bone integrity, to name a few.

**Table 1. Summary of Major Liver Functions<sup>2</sup>**

#### **I. Carbohydrate Metabolism**

Produces and stores glycogen (glycogenesis), produces glucose from liver glycogen and other molecules (gluconeogenesis) and releases it into the blood.

#### **II. Lipid Metabolism**

Oxidizes fatty acids to acetyl-CoA for energy production, synthesizes cholesterol, phospholipids, and bile salts, and excretes cholesterol in bile.

#### **III. Protein Metabolism**

Deamination of amino acids and produces urea, albumin, plasma transport proteins, and clotting factors.

#### **IV. Formation and Storage of Vitamins and Minerals**

Forms the intermediate product in the synthesis of active vitamin D hormone.

Stores iron as ferritin, and stores large amounts of vitamins A, D, and B<sub>12</sub>, and smaller amounts of other B-complex vitamins and vitamin K.

#### **V. Detoxification of Blood**

Conjugates and excretes steroid hormones.

Biotransforms endogenous and exogenous compounds via Phase I and Phase II pathways of detoxification (glucuronidation, etc.).

suggests that trailing eclipta exerts its protective action through a reduction in GSH depletion.<sup>9,10</sup>

#### **Indian Gall Fruit (*Terminalia chebula*)**

Traditionally used in chronic diarrhea and dysentery, flatulence, vomiting, colic, and enlarged spleen and liver. In a study conducted on rabbits, Indian gall fruit had a hypocholesterolemic effect on cholesterol-induced hypercholesterolemia.<sup>11</sup>

#### **Chicory Seed (*Cichorium intybus*)**

Traditionally used for hepatic conditions and liver rejuvenation<sup>5</sup> and has shown protective effects in mice with high levels of liver damaging enzymes.<sup>12</sup>

#### **Long Pepper Fruit (*Piper longum*)**

Piperine, an active alkaloidal constituent, has been shown to exert a significant protection against liver toxicity induced by tert-butyl hydroperoxide and carbon tetrachloride by reducing both in vitro and in vivo lipid peroxidation by decreasing the reduction of GSH.<sup>4,13</sup>

#### **Arjuna Myrobalan Bark (*Terminalia arjuna*)**

The powdered bark is traditionally used as a diuretic and general tonic in cases of cirrhosis of the liver.<sup>14</sup>

#### **Amla Fruit (*Emblica officinalis*)**

Traditionally used for enlarged liver and for liver revitalizing.<sup>14</sup>

#### **Spreading Hog Weed Whole Plant (*Boerhaavia diffusa*)**

Traditionally used for hepatic disorders and for internal inflammation.<sup>14</sup>

#### **Phyllanthus Aerial Parts (*Phyllanthus niruri*)**

The fresh root is traditionally given in jaundice.<sup>14</sup>

### **SUMMARY**

Liver disease appears to be on the increase. Part of this increase may be due to our frequent contact with chemicals and other environmental pollutants. The amount of medicine

consumed has increased greatly with resulting dangers to the liver. The liver, the detoxifying factory in the body, has become an increasingly overworked organ. While those who smoke, abuse alcohol and drugs, and live in severely polluted environments are at greatest risk, we all suffer some threat of damage or disease to the liver. Reducing the consumption of alcohol, mixing drugs or taking unnecessary drugs, and consulting a physician if there are any signs or symptoms of liver disease can help prevent damage to the liver. Prevention also includes maintaining a balanced diet that includes nutrients and herbs that support a healthy liver.

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Unfortunately, the liver is often the most abused organ in the body. It is exposed to alcohol, drugs, and a multitude of environmental toxins, including pesticides, all of which place a burden on this vital organ. This abuse often goes unnoticed because of the liver's considerable capacity to regenerate and the fact that problems associated with liver function occur in distant and seemingly unrelated parts of the body. An overstressed liver can impair detoxification and manifest in what may appear to be unrelated symptoms, such as dyspepsia, generalized malaise and achiness, headaches, menstrual irregularities, bone pain, and muscle stiffness. Eventually, a dysfunctional liver cannot perform its tasks properly and consequently the body becomes subject to toxicity and an overall decline in metabolic function.

Problems associated with liver dysfunction can ultimately lead to serious illness such as hepatitis, cirrhosis, fatty liver, alcoholic liver disease, and biliary cirrhosis. Millions of Americans are afflicted with liver disease, with over 43,000 deaths each year and hospitalization costs greater than 7 billion dollars.<sup>1</sup> Symptoms and signs of liver disease include yellow discoloration of the skin and eyes, dark urine, gray, yellow, or light-colored stools, nausea, vomiting and/or loss of appetite, vomiting of blood, bloody or black stools, abdominal swelling, prolonged generalized itching, unusual change of weight, abdominal pain, sleep disturbances, mental confusion, and fatigue or loss of stamina.<sup>3</sup>

Today, as conventional medicine pursues a more integrated approach to managing disease, natural products and select herbs that influence liver function are being revisited and evaluated for their overall health promoting effects. Examples of notable herbs and nutrients under investigation are garlic (*Allium sativa*), turmeric (*Curcuma longa*), cayenne (*Capsicum annuum*), milk thistle (*Silybum marianum*), flavonoids (quercetin and rutin), B complex vitamins, vitamin C, and proanthocyanidins. In addition, the herbal treasure chest of ancient Ayurveda offers a host of new phytochemicals that can be used both preventively and clinically to manage a spectrum of liver related imbalances.

## AN AYURVEDIC APPROACH TO LIVER DYSFUNCTION

Traditionally trained practitioners of Ayurvedic medicine recognize that balancing liver function is pivotal to ensuring overall health. In dealing with problems of the liver, the primary goal within the system of Ayurveda is to enhance liver detoxification processes and help protect against further damage to the liver. Based on traditional use, herbs are selected and combined for their ability help promote "balance"

within the body and to nourish the liver and related functions, including digestion and bile acid secretion.

For treating liver complaints, an herbal decoction that consists of multiple herbs that may individually have a tremendous variety of properties is commonly used. The majority of Ayurvedic herbs, such as those listed below, are reported to work on multiple biochemical pathways capable of influencing several organ systems simultaneously. The benefit of an herbal decoction is that one can nourish the body as a whole by supporting various organ systems, yet its main focus will be on support of the liver.

### Andrographis Aerial Parts (*Andrographis paniculata*)

Traditionally used for a variety of ailments including liver disorders and has also been shown to protect against toxin-induced hepatotoxicity. The diterpenes of andrographis were shown to increase glutathione (GSH), which may decrease susceptibility of the tissue to oxidative damage.<sup>4</sup>

### Hellebore Root (*Picrorhiza kurroa*)

Used traditionally in Ayurveda for centuries as a general liver tonic and for liver cleansing, hepatitis, biliousness, fevers, and poisoning<sup>5</sup>. In a randomized, double-blind, placebo-controlled trial in patients with acute viral hepatitis, hellebore root (375 mg/3 times daily for 14 days) led to a rapid fall in serum bilirubin levels toward normal range and quicker clinical recovery with no side effects.<sup>6</sup> Current evidence also indicates hellebore root protects against alcohol-induced hepatotoxicity.<sup>7</sup>

### Ginger Rhizome (*Zingiber officinale*)

Traditionally used to promote digestion. Ginger has been found to have a stimulatory effect on gastric secretions and has metabolic and circulatory enhancing effects, which reinforces the therapeutic activity of other herbs.<sup>8</sup>

### Embelia Fruit (*Embelia ribes*)

Traditionally used for hepatic conditions and liver rejuvenation.<sup>5</sup>

### Trailing Eclipta Leaf and Root (*Eclipta alba*)

Traditionally used as a cholagogue (aids bile secretion) and deobstruent (removes functional obstructions in the body) in hepatic enlargement, for jaundice, and other ailments of the liver and gall bladder.

Two coumestans, wedelolactone and demethyl-wedelolactone, were isolated as the main active principles present in trailing eclipta. Both constituents showed anti-hepatotoxic activity in assays using liver enzyme-induced cytotoxicity in cultured rat hepatocytes. These constituents also showed a significant stimulatory effect on liver cell regeneration.<sup>9</sup> Evidence