

Herbal Remedy for Liver Cancer – Review

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Abstract:

Liver is a vital organ play a major role in metabolism and excretion of xenobiotics from the body. Herbal medicines are in great demand in the developed world for primary health care due to their efficacy, safety and lesser side effects. Botanical medicines have been used traditionally by herbalists and indigenous healers worldwide for the prevention and treatment of liver disease. Clinical research in this century has confirmed the efficacy of several plants in the treatment of liver disease, while basic scientific research has uncovered the mechanisms by which some plants provide their therapeutic effects. The biochemical mechanism of cancer prevention in tissues by herbs is proposed. Broadly herbs are rich in alkaloids, flavones, antioxidants, xanthones, omega-3 fatty acids, vitamins, minerals and fibers. Most of the herbs are derived from plants and they act as regulatory biochemical metabolites either by direct intermediary metabolism or regulating cancer pathways and stimulating immunity. The focus of review is to introduce available herbs, herbal biochemical action and herbaceutical anticancer formula. The herbal anticancer formula may be prepared by using: antiproliferative herb extracts combined with vitamin supplement, lactate dehydrogenase enzyme inhibitor, palliative alkalizing sodium or potassium salts as mixture in liquid, paste or syrup form. Herbaceuticals from herbs are potential anticancer supplements if used with care and regulatory guidelines. This article is an overview of botanicals used in the treatment of liver disease.

Key Words: Liver cancer, Hepatogenic, Hepatoprotective effects.

INTRODUCTION:

Cancer is a general term applied to a series of malignant diseases that may affect different parts of the body. These diseases are characterized by a rapid and uncontrolled formation of abnormal cells, which may mass together to form a growth or tumor, or proliferate throughout the body, initiating abnormal growth at other sites. If the process is not arrested, it may progress until it causes the death of the organism [1].

Types Of Cancer : 1) Cancers of Blood and Lymphatic Systems:

a) Hodgkin's disease b) Leukemias, c) Lymphomas, d) Multiple myeloma, e) Waldenstrom's disease. 2) Skin Cancers: a) Malignant Melanoma . 3) Cancers of Digestive Systems:

a) esophageal cancer, b) Stomach cancer, c) Cancer of pancreas, d) Liver cancer, e) Colon and Rectal cancer, f) Anal cancer. 4) Cancers of Urinary system: a) Kidney cancer, b) Bladder cancer, c) Testis cancer, d) Prostate cancer. 5) Cancers in women: a) Breast cancer, b) Ovarian cancer, c) Gynecological cancer, d) Choriocarcinoma

6) Miscellaneous cancers:

a) Brain cancer, b) Bone cancer, c) Carcinoid cancer, d) Nasopharyngeal cancer, e) Retroperitoneal sarcomas f) Soft tissue cancer, g) Thyroid cancer [2]. Symptoms of cancer metastasis depend on the location of the tumor. When cancer begins it invariably produces no symptoms with signs and symptoms only appearing as the mass continues to grow or ulcerates. The findings that result depend on the type and location of the cancer. Few symptoms are specific, with many of them also frequently occurring in individuals who have other conditions. Cancer is the new "great imitator". Thus it is not uncommon for people diagnosed with cancer to have been treated for other diseases to which it was assumed their symptoms were due. [3]. In this article

we are going to discuss about liver cancer and its treatment by herbal plants. There are many herbal plants which cure liver cancer. These plants include *Silybum marianum* (milk thistle), *Picrorhiza kurroa* (kutkin), *Curcuma longa* (turmeric), *Camellia sinensis* (green tea), and *Glycyrrhiza glabra* (licorice), *Silybum marianum*, *Picrorhiza kurroa*, *Curcuma longa*, *Camellia sinensis*, and *Glycyrrhiza glabra*. [4]. In this article we will discuss about *Curcuma longa* (turmeric) and *Green Tea* (*Camellia sinensis*)

LIVER CANCER:

The liver is the largest glandular organ in the body, and has more functions than any other human organ. A person's entire blood supply passes through the liver several times a day. The liver has a pivotal role in human metabolism. Liver produces and secretes bile, it also produces prothrombin and fibrinogen, both blood clotting factors, and heparin, a mucopolysaccharide sulfuric acid ester that helps keep blood from clotting within the circulatory system. The liver converts sugar into glycogen. Liver diseases have become one of the major causes of morbidity and mortality in man and animals all over the globe and hepatotoxicity due to drugs appears to be the most common contributing factor [5]. Among the many diseases that can affect the liver the most common is 'viral hepatitis' (inflammation of liver caused by viral infection). Hepatitis can be caused by drugs, viruses, bacteria, mushrooms, parasites like amoebas or giardiasis. About 20,000 deaths found every year due to liver disorders. The use of natural remedies for the treatment of liver diseases has a long history and medicinal plants and their derivatives are still used all over the world in one form or the other for this purpose. Scientific evaluation of plants has often shown that active principles in these are responsible for therapeutic success. A large number of medicinal plants have been tested and found to contain active principles with

curative properties against a variety of diseases[6]. Liver protective plants contain a variety of chemical constituents like phenols, coumarins, lignans, essential oil, monoterpenes, carotenoids, glycosides, flavanoids, organic acids, lipids, alkaloids and xanthenes[7]. Recent experience has shown that plant drugs are relatively non-toxic, safe and even free from serious side effects[8]. This review article has been presented to enumerate some indigenous plants that have hepatoprotective properties.

HERBAL REMEDY FOR LIVER CANCER:

Herbal drugs have become increasingly popular and their use is wide-spread. Herbal medicines have been used in the treatment of liver diseases for a long time so the maintenance of a healthy liver is essential for the overall well being of an individual. Liver injury induced by toxins is more common nowadays. Herbal remedies are focused in the pharmaceutical industry to evolve a safe route for liver disorders. Therefore, hepatoprotective natural products are *Andrographis paniculata*, *Chamomile capitata*, *Silybum marianum*, *Coccinia grandis*, *Flacourtia indica*, *Wedelia calendulacea*, *Annona squamosa*, *Prostechea michuacana*, *Ficus carica*, *Lepidium sativum*, *Sargassum polycystum*, *Solanum nigrum*, *swertia chirata*, *Phyllanthus emblica*, *Curcuma longa*, *Picrorhiza kurroa*, *Azadirachta indica*, *Aegle marmelos*, *Cassia roxburghii*, *Orthosiphon stamineus*, *Jatropha curcas*, *Foeniculum vulgare*, *Trigonella foenum graecum*, *Eclipta alba*, *Garcinia mangostana*[9]. The present review is aimed at compiling data about *Curcuma Longa*(Turmeric) and Green Tea(*Camellia sinensis*).

Curcuma longa (TURMERIC):



Scientific classification

Kingdom: Plantae
 Subkingdom: Tracheobionta
 Superdivision: Spermatophyta
 Division: Magnoliophyta
 Subclass: Zingiberidae
 Order: Zingiberales
 Family: Zingiberaceae

DESCRIPTIPON:

Curcuma longa is a member of the ginger family. It is a tropical plant extensively cultivated in the tropical areas of Asia, and to a lesser extent in Africa. It is the source of the spice turmeric, which is derived from the dried, ground rhizome[11].

HISTORY OF TURMERIC:

Marco polo (1280 AD) refers to turmeric as Indian saffron used for dyeing cloths. As far as documented evidence, it is used daily in India for at least 6000 years as medicine, beauty aids, cooking spice and a dye. Ostensibly it was used to worship the Sun during the solar period of India, a time when Lord Ram Chandra walked the Earth. It was mentioned in the Artharveda of India. Buddhist monks have used turmeric as a dye for their robes for at least 2000 years. It was listed in an Assyrian herbal circa 600 BC and was mentioned by Discorides in the herbal that was the western herbal rediscovered it 700 years ago via Marco Polo and it is used in traditional lethal poison of pit vipers. In China it was mentioned in the Pent-Sao of the 7th century. For at least 1000 years Chinese used turmeric as medicine especially for the spleen, stomach and liver medicines. They use it to stimulate and purify and as an anti-biotic, anti-viral and an analgesic[12].

ACTIVE CONSTITUENTS :

Turmeric is comprised of a group of three curcuminoids: curcumin (diferuloylmethane), demethoxycurcumin, and bisdemethoxycurcumin, as well as volatile oils (tumerone, atlantone, and zingiberone), sugars, proteins, and resins. The curcuminoid complex is also known as Indian saffron[13]. Curcumin is a lipophilic polyphenol that is nearly insoluble in water but is quite stable in the acidic pH of the stomach[14].

TURMERIC MEDICINAL USES:

From many years awareness of turmeric and its use as medicine is continuously increasing. A flowering plant, Turmeric, in the ginger family, is commonly used as a food coloring and is one of the basic ingredients in curry powder[15]. To heal many health disorders like liver problems, digestive disorders, treatment for skin diseases and wound healing turmeric has long been used in Medicinal as an anti-inflammatory. Curcumin is the active ingredient in turmeric which has been shown to have a wide range of therapeutic effects[16]. This improves the body's ability to digest fats. For chronic digestive weakness and/or congestion turmeric is recommended.

Liver Diseases:

Turmeric is beneficial for its influence on the liver. In spring more consumption of herbs and foods can strengthen the liver. Turmeric shares similar liver protectant compounds that milk thistle and artichoke leaves contain. It is said to shrink engorged hepatic ducts, so it can be useful to treat liver conditions such as hepatitis, cirrhosis, and jaundice[17].

Cancer:

Recent scientific research confirm that turmeric can cure host of diseases, also they found that turmeric restrain the growth of various types of cancer. Turmeric is used for the treatment of skin cancer[18].

Bacterial Infection / Wounds:

Turmeric is useful as an external antibiotic in preventing bacterial infection in wounds.

Other Health Disorders:

Turmeric decreases congestion and inflammation from stagnant mucous membranes. Turmeric is anti-inflammatory to the mucous membranes, which coat the throat, lungs, stomach and intestines. Regular use of turmeric can benefit from Colitis, Crohn's disease, diarrhea, and post-giardia or post salmonella conditions. The itching and inflammation that accompanies hemorrhoids and anal fissures can reduce by use of turmeric. Turmeric can also benefit skin conditions including: eczema, psoriasis and acne, for those it is potent detoxifier "Turmeric gives the energy of the Divine Mother and grants prosperity of health. Turmeric is effectual for purification the chakras, as well as purifying the path of the subtle body."

HEPATOPROTECTIVE ACTIVITY IN LIVER CANCER:

In vitro and *in vivo* animal studies provide evidence for the hepatoprotective effects of turmeric however, there are no human clinical studies.

Like silymarin, turmeric has been found to protect animal livers from a variety of hepatotoxic substances, including carbon tetrachloride, 7,8 galactosamine, 9 pentobarbitol, 1-chloro-2,4-dinitrobenzene, 7 4-hydroxynonenal, 10 and acetaminophen (paracetamol). The hepatoprotective effects of turmeric may stem from its potent antioxidant effects. Turmeric contains several water- and fat-soluble antioxidant compounds, of which curcumin was found to be the most active. The antioxidant effects of other components of turmeric are also significant. A heat-stable protein isolated from the aqueous extract of turmeric was found to be more effective against superoxide than curcumin, and more effective in inhibiting oxidative damage to DNA. Dietary supplementation of turmeric in rats (one percent body weight turmeric for 10 weeks) was found to significantly protect detoxification by increasing the activity of glutathione S-transferase, 10, 20 an enzyme which conjugates glutathione with a wide variety of toxins to facilitate their removal from the body. y weight turmeric for 10 weeks) was found to significantly protect detoxification by increasing the activity of glutathione S-transferase, 10, 20 an enzyme which conjugates glutathione with a wide variety of toxins to facilitate their removal from the body [20].

ANTI-INFLAMMATORY ACTIVITY:

Both the volatile oil and curcumin exhibit powerful anti-inflammatory effects. Orally administered, curcumin was found to be as effective as cortisone or phenylbutazone in acute inflammation, and one-half as effective in chronic inflammation as these drugs, without toxic side-effects. One mechanism of curcumin's anti-inflammatory activity may be its ability to block the production of pro-inflammatory arachidonic acid. Curcumin significantly inhibited the conversion of dihomo-gamma-linolenic acid to arachidonic acid in the fungus *Mortierella alpina* and in rat liver microsomes.

CHOLERETIC ACTIVITY:

Curcumin also has choleric effects on the liver. Bile acid production was increased over 100 percent in rats after oral curcumin administration. Increased production of other constituents of bile, including cholesterol, bile salts, and bilirubin, was also demonstrated.

GREEN TEA (Camellia sinensis):**Scientific Classification**

Kingdom: Plantae
Order : Ericales
Family : Theaceae
Genus : Camellia
Species : *C. sinensis*

DESCRIPTION:

Green, black, and oolong teas all derive from the leaves of *Camellia sinensis*, which is cultivated widely in China, India, Japan, and Indonesia. When cultivated, it grows as a well-trimmed bush with alternating evergreen leaves. Originally from East Asia, the wild plant grows as a large shrub or tree. Green tea is made from unfermented leaves which are lightly steamed to inactivate the enzymes which would allow fermentation, then dried. The leaves of oolong tea are partially fermented, and black tea is fully fermented. The greater the fermentation, the lower the polyphenol content and the higher the caffeine content. Black tea has 2-3 times the caffeine content of green tea.

HISTORY AND USE:

Tea has been used as both a drink and a medicine for approximately 5000 years in China. Historical uses of tea are as a stimulant, an astringent for clearing phlegm, and as a digestive aid. Tea contains a wide assortment of bioactive constituents, most of which are contained in two groups, alkaloids and polyphenols. Examples of alkaloids found in tea include caffeine, theobromine, and theophylline. These alkaloids provide the stimulant effects of tea and figure prominently in the experience of tea drinking, although they are not thought to be central to tea's medicinal effects. The polyphenols found in all tea give it its astringent, somewhat bitter flavor. The hepatoprotective and other health effects of green tea are believed to be chiefly dependent on the polyphenol content. The polyphenols contained in teas are classified as catechins, which are considered to be bioflavonoids, which in turn is a subcategory of the larger group of polyphenols. Green tea contains six primary catechin compounds: (+)- catechin, gallic acid, epigallocatechin, epigallocatechin gallate, andepigallocatechin gallate. Epigallocatechin gallate (also known as EGCG) is considered to be the most active component, and is the best researched of the green tea polyphenols (GTP).

Green tea contains about 30-40 percent polyphenols (dry weight), whereas the polyphenol content of black tea is 3-

10 percent .The average cup of green tea contains 50 to 150 mg of polyphenols[21].

HEPATOPROTECTIVE ACTIVITY:

Green tea has been found to provide protection to the liver against a variety of toxic insults, including the industrial solvent 2-nitropropane (also found in cigarette smoke), 3,4-dihydroxyacetophenone, 3,5-d-galactosamine, 3,6 and 1,4-naphthoquinone. In addition, the anti- carcinogenic effect of green tea on the liver and other organs has been well researched. Much is known about the hepatoprotection afforded by green tea. Catechins have been discovered to be powerful antioxidants, which is thought to be at least in part responsible for green tea's hepatoprotective activity[22]. Histopathological examination revealed effective protection against induction of hepatic degenerative changes by 2-nitropropane at 15 Catechins have also been shown to inhibit lipid peroxidation due to other toxins, including tert-butyl hydroperoxide and bromotrichloromethane, 1,4-naphthoquinone, and singlet oxygen. The hepatoprotective effect of green tea is not dependent on its direct antioxidant effects alone. Green tea catechins have been shown to maintain intracellular protein thiol levels[23]. Protein thiols help maintain the intracellular reduction-oxidation (redox) balance. Protein tertiary configuration (shape), and therefore cellular function, is dependent on the maintenance of the redox balance. In rat liver cells exposed to 1,4-naphthoquinone, green tea extract prevented the expected cellular damage. This protective effect was suggested to be due to maintenance of protein thiol levels by green tea[24]. Much of the green tea research involves its effects on cancer prevention and treatment. A full review of the anti-cancer properties of green tea is beyond the scope of this review, but at least a passing mention must be made on the subject with regard to liver cancer. Green tea has been found to reduce or prevent the growth of hepatic neoplasms in rodentsonly treated animals.[25].

CONCLUSION:

More researches is required to explore the herbal remedy for liver cancer. In spite of tremendous strides in modern medicine, there is hardly any drug that stimulates liver functions protect liver from damage or help regenerating hepatic cells. However a number of drugs are employed in traditional system of medicine for liver affections. Therefore the most effective drug for each kind of liver disease. Pharmacovigilance of plant based drugs be further improved and mechanism of action must be elucidated. There is still lot of work to be done in order to achieve a reliable standardized products and link it to a specific biological activity and therapeutic application.

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