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Alcoholic liver cirrhosis & herbs

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Abstract: *Alcohol is a toxin in higher doses, when it is associated with polyunsaturated fatty acids (PUFA) induces oxidative stress & hepatotoxicity Alcohol destroys the cells lining in the stomach and intestines that mediate the absorption of nutrients. Alcohol greatly increases lead absorption. Low concentration of lead may disturb normal biochemical process in the hepato billary system. Lead overload causes liver cells to become enlarged into hyperplasia (initiating the formation of tumours in the liver); Liver cells die more rapidly and are replaced by fatty deposits. Acetaldehyde, a major toxic metabolite, is one of the principal culprits mediating fibrogenic and mutagenic effects of alcohol in the liver.*

Liver cirrhosis leads to depletion of nutrients The by-products of alcohol metabolism generate oxidants that can contribute to cell damage. An imbalance between oxidants and antioxidants (substances that neutralize oxidation) can create oxidative stress, a state marked by continued production of oxidizing agents and escalation of cell damage,

The cumulative result is that hepatotoxicity develops, liver becomes unable to neutralize oxidants' scavenging capacity is lost. There is escalation of cell damage leading to degeneration of liver cells; regenerative capacity is lost under such critical situation. we need the drugs which have scavenging capacity to detoxify the liver, bioavailability is high,and is anti oxidant, Such compound can't be synthesized easily in laboratory .In Indigenous Medicine System ,there are sevsral herbs which are effective in liver disease.

Key words: *Kupffer cell Malanoaldehyde Bile pigments and bilurubin , Lipid peroxidation Hepatotoxicity*

I. Introduction

Alcoholic liver cirrhosis is a type of liver damage where healthy cells are replaced by scar tissue. Cirrhosis of the liver is fatal disease. Excessive and chronic alcohol consumption is the most common cause of liver cirrhosis. Cirrhosis from drinking alcohol can develop over many years. Alcohol is a fascinating compound. It is a high-energy molecule that can release tremendous energy to the body when it is chemically broken down. Body can run on alcohol', though it is an unhealthy fuel for body that leads to depletion of specific nutrients including zinc, magnesium, copper, iron and some B-complex vitamins, among others. In particular, many alcoholics develop copper and cadmium toxicity as a result of zinc deficiency. This can result in many serious conditions. A vicious cycle often ensues when nutritional deficiencies develop. The body's natural energy system becomes crippled. This can cause a craving for alcohol as the fuel of choice, since it uses a different metabolic pathway to produce energy in the body. Once one begins drinking alcohol the nutrient deficiencies worsen, and this increases the cravings for alcohol. The liver is unable to perform its vital functions of metabolism, production of proteins, including blood clotting factors,filtering of drugs and toxins. Depending on the cause, cirrhosis can develop over months or years. There is no cure. Treatment aims to halt liver damage, manage the symptoms and reduce the risk of complications, such as diabetes, osteoporosis (brittle bones), liver cancer and liver failure.

Common causes of liver cirrhosis include excessive drinking of alcohol, hepatitis B and C and fatty liver caused by obesity and diabetes. Hepatitis is a general term meaning inflammation of the liver. Viral hepatitis refers to hepatitis caused by a virus like the hepatitis B or C virus. Chronic hepatitis C is a common cause of liver cirrhosis. Hepatitis B can also cause cirrhosis. With either of these conditions, alcohol increases risk of developing cirrhosis.

Without medical treatment, cirrhosis of the liver can lead to a range of potentially life-threatening complications like primary liver cancer, liver failure, ascites .etc.

II. Problems due to liver disorder

Liver disease is a term for a collection of conditions, diseases, and infections that affect the cells, tissues, structures, or functions of the liver this results in an increase in the bile pigments and bilurubin in the blood, giving the skin and mucus membrane a yellow tinge

The liver is an important organ responsible for: Filtering the blood. Making bile, a substance that helps digest fat and excrete certain fatty substances. Processing and hooking fats to carriers (including cholesterol), and storing sugars, helping the body transport and save energy. Making important proteins, such as most of those involved in blood clotting Metabolizing many medications, such as barbiturates, sedatives, and

amphetamines Storing iron, copper, vitamins A and D, and several of the B vitamins Making important proteins like albumin that regulate fluid transport in the blood and kidneys .Helping break down and recycle red blood cells.

Cirrhosis is a serious disease that changes the structure of the liver so that it cannot function properly. One of the biggest problems with cirrhosis is that less blood flows through the liver, and the toxins that are normally eliminated can now poison the body. About 20 percent of heavy drinkers eventually develop cirrhosis and alcoholic hepatitis is often a precursor of cirrhosis. This condition can also be caused by poor nutrition (especially too little protein), poisonous substances, or a previous viral or bacterial infection that inflamed and weakened the liver.

III. Role of Micronutrients

Micronutrients are vitamins and minerals that all humans need to maintain strong bodies and mental sharpness, fight off diseasess, and bear healthy children. Micronutrient deficiency is caused by inadequate access to micronutrient-rich food, high burden of infection and parasites, detrimental feeding and dietary practices. Micronutrient deficiency adversely affects the health Vitamin A, iron; iodine, zinc, and folate among others profoundly affect health, and overall resistance to illness.

Proper intake of vitamins and minerals can mean the difference between a healthy productive life, and a life fraught with illness. The deficiency of zinc has an effect on circulation; it has been linked to cold hands and feet and high blood pressure. Cholesterol in the blood has a tendency to rise if there is a deficiency of zinc in the body. Depression and mental lethargy can also result from zinc deficiency. The lack of zinc can also have a marked effect on emotional and addictive behavior such as alcoholism and obsessions. In the case of alcoholism, alcohol depletes zinc from the body when it is consumed which then intern starts a downward cycle of craving for more alcohol which then results in more depletion of zinc and so on. Zinc deficiency is common in low-income pregnant women, people suffering from liver cirrhosis, people with Down's syndrome, vegetarians, alcoholics, people with sickle cell anaemia, people with chronic kidney disease and malabsorption problems.

Phytates (wheat), alcohol, oxalates such as rhubarb and spinach, stress, high calcium, high sugar intake, copper and low protein intake all hampers the absorption of zinc.

In conclusion, zinc is an essential mineral with over 300 enzymes reliant on it to help heal wounds, maintain fertility in adults, protect against free radicals, promote healthy growth in children, boost immunity, synthesize protein, and help cells reproduce. Deficiency is very common (especially in the Third World) and can cause major health complaints,

Low sodium intakes have also been shown to directly reduce zinc retention Zinc is critical for normal growth. It plays a role in the immune system and is important to the proper function of at least 70 enzymes including one that helps protect cells from damage.

Micronutrients play a central role in metabolism and in the maintenance of tissue function. There is a highly integrated system to control the flux of micronutrients in illness; this demonstrates just how important the body perceives the micronutrients to be. An adequate intake therefore is necessary to sustain metabolism and tissue function, but provision of excess supplements to individuals who do not need them may be harmful. Clinical benefit is most likely in those individuals who are severely depleted and at risk of complications. Much more research is needed to characterize better markers of micronutrient status both in terms of metabolic effects and antioxidant effects,

Although they are all considered micronutrients, vitamins and minerals differ in basic ways. Vitamins are organic and can be broken down by heat, air, or acid. Minerals are inorganic and hold on to their chemical structure.

The interplay of micronutrients isn't always cooperative, For example, vitamin C blocks body's ability to assimilate the essential mineral copper .Even a minor overload of the mineral manganese can worsen iron deficiency. Micronutrients build proteins and cells. Vitamins B6, B12, and folic acid metabolize amino acids (the building blocks of proteins) and help cells to multiply.

The body needs and stores, fairly large amounts of the major minerals. These minerals are no more important to health than the trace minerals; they're just present in body in greater amounts.

Major minerals travel through the body in various ways. Potassium, for example, is quickly absorbed into the bloodstream, where it circulates freely and is excreted by the kidneys, much like a water-soluble vitamin. Calcium is more like a fat-soluble vitamin because it requires a carrier for absorption and transport.

The body regulates the balance between every element processed in the diet. Magnesium and other minerals are normally kept in tight proportion to other elements. Without such regulation, cells would not be able to function properly, and a host of dysfunctions would result. Magnesium is obtained naturally from foods like leafy green vegetables. Some people require dietary supplements to maintain an adequate supply.

3.1Magnesium assists enzymes in more than 300 chemical reactions in the body It supports cellular activity .Participates in muscle contraction and. aids in blood clotting

The UL for magnesium is 350 milligrams from supplements or medicines because it may cause diarrhea. Severe toxicity may cause confusion, loss of kidney function, difficulty breathing and cardiac arrest. .Magnesium deficiency can occur in individuals with kidney disease, alcoholism or prolonged diarrhea. Early signs of poor magnesium status are loss of appetite and weakness. Later signs are muscle cramps, irritability, confusion and cardiac abnormalities. Many people consume suboptimal amounts of magnesium, and low magnesium stores may be related to increased risk of cardiovascular disease, high blood pressure, type 2diabetes and immune dysfunction.

Magnesium is a nutrient essential to the body's well being. More than one-third of magnesium ingested is absorbed; the remainder is excreted. The skeleton contains about half the body's magnesium, and only 1 percent is present in the blood. The rest of the body's magnesium is contained in cells and used in processes such as protein synthesis and energy metabolism. The body has mechanisms to make sure magnesium levels in the bloodstream are kept at certain levels.

Magnesium is required for the proper growth and maintenance of bones. Magnesium is also required for the proper function of nerves, muscles, and many other parts of the body. In the stomach, magnesium helps neutralize stomach acid and moves stools through the intestine.

Magnesium is a cofactor in more than 300 enzyme systems that regulate diverse biochemical reactions in the body, including protein synthesis, muscle and nerve function, blood glucose control, and blood pressure regulation. Magnesium is required for energy production, oxidative phosphorylation, and glycolysis. It contributes to the structural development of bone and is required for the synthesis of DNA, RNA, and the antioxidant glutathione. Magnesium also plays a role in the active transport of calcium and potassium ions across cell membranes, a process that is important to nerve impulse conduction, muscle contraction, and normal heart rhythm Magnesium is needed for more than 300 biochemical reactions in the body.

Magnesium helps our heart maintain its normal rhythm. It helps our body to convert glucose (blood sugar) into energy, and it is necessary for the metabolization of the micronutrients calcium and vitamin C.

Magnesium counterbalances calcium, thus helping to regulate nerve and muscle tone. In many nerve cells, magnesium serves as nature's own calcium channel blocker, preventing calcium from rushing into the nerve cell and activating the nerve. By blocking calcium's entry, magnesium keeps our nerves (and the blood vessels and muscles they enervate) relaxed. If our diet provides us with too little magnesium, however, calcium can gain free entry, and the nerve cell can become over activated, sending too many messages and causing excessive contraction. Insufficient magnesium can thus contribute to high blood pressure, muscle spasms (including spasms of the heart muscle or the spasms of the airways symptomatic of asthma), and migraine headaches, as well as muscle cramps, tension, soreness and fatigue

Having too much of one major mineral can result in a deficiency of another. These sorts of imbalances are usually caused by overloads from supplements.

Calcium binds with excess sodium in the body and is excreted when the body senses that sodium levels must be lowered. That means too much sodium through table salt or processed foods, could end up losing needed calcium as body gets rid itself of the surplus sodium. Likewise, too much phosphorus can hamper the ability to absorb magnesium.

Trace minerals carry out a diverse set of tasks.

Iron is best known for ferrying oxygen throughout the body .Fluoride strengthens bones and wards off tooth decay.

Trace minerals interact with one another, sometimes in ways that can trigger imbalances. Too much of one can cause or contribute to a deficiency of another. A minor overload of manganese can exacerbate iron deficiency. Having too little can also cause problems.

When the body has too little iodine, thyroid hormone production slows, causing sluggishness and weight gain as well as other health concerns. The problem worsens if the body also has too little selenium.

3.2 Calcium: Excess calcium may cause mineral imbalances because it interferes with the absorption of iron, magnesium, zinc and others. Too little calcium causes osteoporosis. Some research connects low calcium intake to increased risks of high blood pressure & colon cancer.

Sulfur assists in some of the liver’s drug-detoxifying pathways. It is component of some vitamins and amino acids.

The minerals that the body requires in amounts less than 100 milligrams per day are referred to as trace minerals. They are chromium, copper, fluoride, iodine, iron, manganese, molybdenum, selenium and zinc.

3.3 Molybdenum: Molybdenum assists several enzymes including one required for the metabolism of sulfur-containing amino acids. Both molybdenum deficiency and toxicity are rare. High doses of molybdenum, however, inhibit copper absorption.

3.4 Selenium: Selenium is required for immune function and for the synthesis of thyroid hormones. Additionally, this mineral assists enzymes in protecting cell membranes from damage. Low selenium intake may decrease an individual's ability to fight viral infections. Some research also links low intakes to some cancers.

For overall good health, each nutrient is as important as the next. Whether they are macronutrients or micronutrients, vitamins, major minerals or trace minerals, they each have a unique role. A deficiency in any will impact wellbeing. Eating a diet with both a variety of food groups and a variety within food groups is best protection against nutrient imbalances.

3.5Vitamin A

Vitamin A is essential for optimal health, growth, and development. In children, vitamin A deficiency compromises the immune system, increasing the risk of severe illness and death from diarrheal diseases and other infections, such as measles. Vitamin A comes in two forms: one from animal sources and the other from plants. Absorption is greater from animal sources. Deficiency is the result of insufficient intake of animal sources of vitamin A and low absorption of plant sources often due to inadequate fat or oil in the diet.

3.6 B vitamins

Folate, also called vitamin B-9, is essential in the production and maintenance of new cells, absorption of this vitamin is inhibited by ingestion of alcohol. Alcohol inhibits absorption of folate and other vitamins by killing the cells lining the stomach and intestines that mediate the absorption of these nutrients.

Nutritional deficiency of folate is common in people consuming a highly refined, unfortified diet or one lacking in diversity. Nutritional deficiencies are common among alcoholics Alcohol interferes with dietary folate intake, folate absorption, and transport of folate to tissues, the storage and release of folate by liver

Calcium needed for blood vessel and muscle contraction and expansion for the secretion of hormone and enzymes. Alcohol can cause loss of calcium. Numerous deficiencies may occur The damage of liver and other organs brought about by excessive alcohol consumption causes severe problem leading to vitamin and mineral deficiencies

3.7 Thiamin

Alcohol reduces the ability of the body to absorb the vitamin thiamin, also called vitamin B-1 that helps break down carbohydrates, proteins and fat in the food. It also aids in production of hemoglobin, the protein that binds oxygen in red blood cells. A severe deficiency in thiamin leads to a life-threatening brain disorder called Wernicke-Korsakoff Syndrome,

IV. Multiple Micronutrients

Good health requires the presence of numerous micronutrients. For example, vitamin C and vitamin A are needed for intestinal iron absorption. Adequate amounts of folate, vitamin B-2, vitamin B-6, and vitamin B-12 are essential for the synthesis of red blood cells. Public health experts are becoming increasingly aware that populations deficient in one vitamin or mineral are usually deficient in other micronutrients as well.

Intracellular magnesium is correlated with intracellular potassium. Magnesium is absorbed in the gastrointestinal tract, with more absorbed when status is lower. Magnesium competes with calcium in the human body, in this way it actually keeps calcium in check. However, this can cause a calcium deficiency if calcium levels are already low. Low and high protein intake inhibit magnesium absorption, and other factors such as phosphate, phytate, and fat affect absorption

Iron –

Iron has a number of key functions within the body. It acts as a carrier for oxygen from the lungsto the body's ti ssues – it does so in the form of hemoglob in – and it is integral to the working of various tissues through the role that it plays in enzymatic reactions. Iron deficiency ultimately leads to iron deficiency a nemia, the most common cause of anemia, a condition in which the blood lacks healthy red bloods cells required to carry oxygen, which results in morbidity and death.

Iron plays an important role in biology, forming complexes with molecular oxygen in hemoglobin and myoglobin; these two compounds are common oxygen transport proteins in vertebrates. Iron is also the metal used at the active site of many important redox enzymes dealing with cellular respiration , oxidation and reduction in plants and animals.

Iron is a necessary trace element found in nearly all living organisms. Iron-containing enzymes and proteins, often containing hemeprosthetic groups, participate in many biological oxidations and in transport. Examples of proteins found in higher organisms include hemoglobin, cytochrome and catalase.

The human body stores some iron to replace any that is lost. However, low iron levels over a long period of time can lead to iron deficiency anemia.

Anemia is one result of advanced-stage iron deficiency. When the body has sufficient iron to meet its needs (functional iron), the remainder is stored for later use in all cells, but mostly in the bone marrow, liver,

and spleen. These stores are called ferritin complexes and are part of the human (and other animals) iron metabolism systems.

4.1Iron-Deficiency Anemia

Iron is very important in maintaining many body functions, including the production of hemoglobin, the molecule in blood that carries oxygen. Iron is also necessary to maintain healthy cells, skin, hair, and nails.

Iron from the food is absorbed into the body by the cells that line the gastrointestinal tract; The iron is then released into the blood stream, where a protein called transferrin attaches to it and delivers the iron to the liver. Iron is stored in the liver as ferritin and released as needed to make new red blood cells in the bone marrow. When red blood cells are no longer able to function (after about 120 days in circulation), they are re-absorbed by the spleen. Iron from these old cells can also be recycled by the body.

Traditional diets in some parts of the world contain a high level of chemicals such as phytates and polyphenols. For example, certain types of flat breads (such as chapatis) may contain a high level of phytates. Tea can contain a high level of polyphenols. These chemicals interfere with the way iron is absorbed from the gut. So, if you eat a lot of these foods, it can lead to iron deficiency. For example, iron-deficiency anaemia is common in parts of India where chapatis are a staple food.

The body needs certain vitamins, minerals, and nutrients to make enough red blood cells. Iron, vitamin B12, and folic acid are three of the most important ones.

Copper is essential to all living organisms as a traces dietary mineral because it is a key constituent of the respiratory enzyme complex cytochrome c oxidase. In molluscs and crustacea copper is a constituent of the blood pigment hemocyanin, which is replaced by the iron-complexes hemoglobin in fish and other vertebrates. The main areas where copper is found in humans are liver, muscle and bone

Copper works with iron to help the body form red blood cells. It also helps to keep the blood vessels, nerves, immune system, and bones healthy .Lack of copper may lead to anemia and osteoporosis

4.2Manganese: Manganese promotes bone formation and energy production, and helps body to metabolize the macronutrients, protein, carbohydrate and fat.

Manganese is important in many enzyme-mediated chemical reactions Regulation of the body's metabolism is one of the vital functions of manganese. Manganese-activated enzymes help in the metabolism of cholesterol, amino acids, and carbohydrates. It is also important for the metabolism of Vitamins like Vitamin E and Vitamin B-1. Furthermore, it helps the liver to function properly and run smoothly,

Manganese helps to absorb vital vitamins like vitamin B and E and minerals like magnesium. This is due to the role of manganese in the enzymatic reactions that are required to absorb and utilize vitamins taken in from food. Manganese is one of the most versatile co-factors for enzymatic reactions, and if there is a risk of having a deficiency in certain vitamins, then is sure to increase levels of manganese, as long as they are still within safe and non-toxic levels.

In biology, manganese (II) ions function as cofactors for a large variety of enzymes with many functions. Manganese enzymes are particularly essential in detoxification of superoxide free radicals in organisms that must deal with elemental oxygen. Manganese also functions in the oxygen-evolving complex of photosynthetic plants. The element is a required trace mineral for all known living organisms

Copper, zinc, selenium, and molybdenum are involved in many biochemical processes supporting life. The most important of these processes are cellular respiration, cellular utilization of oxygen, DNA and RNA reproduction, maintenance of cell membrane integrity, and sequestration of free radicals. Copper, zinc, and selenium are involved in destruction of free radicals through cascading enzyme systems. Superoxide radicals are reduced to hydrogen peroxide by superoxide dismutases in the presence of copper and zinc cofactors. Hydrogen peroxide is then reduced to water by the selenium-glutathione peroxidase couple. Efficient removal of these superoxide free radicals maintains the integrity of membranes, reduces the risk of cancer, and slows the aging process

Proponents claim molybdenum is an antioxidant that prevents cancer by protecting cells from free radicals, destructive molecules that may damage cells. Some supporters also claim that molybdenum prevents anemia,

Minerals and cofactors

Inorganic elements play critical roles in metabolism; some are abundant (e.g. sodium and potassium) while others function at minute concentrations.

The abundant inorganic elements act as ionic electrolytes. The most important ions are sodium, potassium, calcium,magnesium, chloride, phosphate and the organic ion bicarbonate. The maintenance of precise ion gradients across cell membranes maintains osmotic pressure and pH. Ions are also critical for nerve and muscle function, as action potentials in these tissues are produced by the exchange of electrolytes between the extracellular fluid and the cell's fluid, the cytosol Electrolytes enter and leave cells through proteins in the cell membrane called ion channels. For example, muscle contraction depends upon the movement of calcium, sodium and potassium through ion channels in the cell membrane and T-tubules.

Transition metals are usually present as trace elements in organisms, with zinc and iron being most abundant of those. These metals are used in some proteins as cofactors and are essential for the activity of enzymes such as catalase and oxygen-carrier proteins such as hemoglobin. Metal cofactors are bound tightly to specific sites in proteins; although enzyme cofactors can be modified during catalysis, they always return to their original state by the end of the reaction catalyzed. Metal micronutrients are taken up into organisms by specific transporters and bind to storage proteins such as ferritin or metallothionein when not in use.

4.3 Chromium:

Trivalent chromium (Cr(III)) ion is possibly required in trace amounts for sugar and lipid metabolism, although the issue remains in debate. In larger amounts and in different forms, chromium can be toxic and carcinogenic. The most prominent example of toxic chromium is hexavalent chromium (Cr (VI) Chromium is a mineral that humans require in trace amounts, although its mechanisms of action in the body and the amounts needed for optimal health are not well defined

Chromium, like many transition metal elements, is essential to life at low concentrations yet toxic to many systems at higher concentrations. Chromium, in its myriad chemical forms and oxidation states, has been well studied in terms of its general chemistry and its interactions with biological molecules. However, the precise mechanisms by which chromium is both an essential metal and a carcinogen are not yet fully clear.

Water insoluble chromium(III) compounds and chromium metal are not considered a health hazard, while the toxicity and carcinogenic properties of chromium(VI) have been known for a long time.

Because of the specific transport mechanisms, only limited amounts of chromium(III) enter the cells. Several in vitro studies indicated that high concentrations of chromium(III) in the cell can lead to DNA damage. The proposed beneficial effects of chromium(III) and the use as dietary supplements yielded some controversial results, but recent reviews suggest that moderate uptake of chromium(III) through dietary supplements poses no risk.

In the body, chromium(VI) is reduced by several mechanisms to chromium(III) already in the blood before it enters the cells. The chromium(III) is excreted from the body, whereas the chromate ion is transferred into the cell by a transport mechanism, by which also sulfate and phosphate ions enter the cell. The acute toxicity of chromium(VI) is due to its strong oxidational properties. Which damages the kidneys, the liver and blood cells through oxidation reactions Hemolysis, renal and liver failure are the results of these damages.

Three mechanisms have been proposed to describe the genotoxicity of chromium(VI). The first mechanism includes highly reactive hydroxyl radicals and other reactive radicals which are byproducts of the reduction of chromium(VI) to chromium(III). The second process includes the direct binding of chromium(V), produced by reduction in the cell, and chromium(IV) compounds to the DNA. The last mechanism attributed the genotoxicity to the binding to the DNA of the end product of the chromium(III) reduction. Chromium seems to have crucial role in alcoholic liver cirrhosis.

V. Liver disorder

As per common experience rancid oil causes liver disorder .Rancid oil forms free radicals in body, which are known to cause cellular damage and have been associated with diabetes, Alzimer's disease and other conditions. Rancid oil can cause digestive disorder and deplete the body of Vit. B and Vit E. Rancid oil can damage to DNA, accelerating age, promote tissue degeneration and foster cancer development.

Rancid oil can produce damaging chemicals and substances – can cause harm over a period of time. Chemicals such as peroxides and aldehydes can damage cells.

VI. Rancidification

the product of which can be described as rancidity, is the chemical decomposition of fats, oils and other lipids. Specifically, it is the hydrolysis and/or autoxidation of fats into short-chain aldehydes and ketones

Oxidative rancidity

Oxidative rancidity is associated with the degradation by oxygen in the air. Via a free radical process, the double bonds of an unsaturated fatty acid can undergo cleavage, releasing volatile aldehydes and ketones.Several ketones and aldehydes have been classified as known or likely carcinogens.

Aldehydes are organic compounds that are widespread in nature. They can be formed endogenously by lipid peroxidation (LPO), carbohydrate or metabolism ascorbate autoxidation, amine oxidases, or myeloperoxidase-catalyzed metabolic activation.

Chronic alcohol abuse causes liver disease that progress from simple steatosis through stages of steatohepatitis, fibrosis, cirrhosis, and eventually hepatic failure. In addition, chronic alcoholic liver disease (ALD), with or without cirrhosis, increases risk for hepatocellular carcinoma (HCC). Acetaldehyde, a major toxic metabolite, is one of the principal culprits mediating fibrogenic and mutagenic effects of alcohol in the liver.

Kupffer cell is intimately involved in the liver's response to infection, toxins, ischemia, resection and other stresses. This review summarizes established basic concepts of .Kupffer cells function as well as their role in the pathogenesis of various liver diseases.

Kupffer cell activation is responsible for early ethanol-induced liver injury, common in chronic alcoholics.

Kupffer cells are resident macrophages of the liver and play an important role in its normal physiology and homeostasis as well as participating in the acute and chronic responses of the liver to toxic compounds.Similarly, liver damage seen in chronic ethanol consumption appears to be modulated by Kupffer cell activation .Kupffer cells therefore appear to play a central role in the hepatic response to toxic and carcinogenic agents.

If oxidative rancidity is present in severe quantities, a potential health hazard may exist. Malanoaldehyde is decomposition product of polyunsaturated fatty acid. This chemical is reportedly carcinogenic.

Initially the oil decomposes in to hydroperoxide, then in to aldehydes. found in human and animal tissues. It is found in many food stuffs and can be present at high level in rancid foods.

Lipid peroxidation generates many other aldehydes that may also be of toxicological significance. Malondialdehyde is in many instances the most abundant individual aldehyde resulting from lipid peroxidation,

Vitamins. are essential to maintain growth and normal metabolism because they regulate many physiological processes. Chronic heavy drinking is associated with deficiencies in many vitamins because of decreased food ingestion and, in some cases, impaired absorption, metabolism, and utilization. For example, alcohol inhibits fat absorption and thereby impairs absorption of the vitamins A, E, and D that are normally absorbed along with dietary fats.

Vitamins A, C, D, E, K, and the B vitamins, also deficient in some alcoholics, are all involved in wound healing and cell maintenance. In particular, because vitamin K is necessary for blood clotting, deficiencies of that vitamin can cause delayed clotting and result in excess bleeding.

Minerals. Deficiencies of minerals such as calcium, magnesium, iron, and zinc are common in alcoholics, although alcohol itself does not seem to affect the absorption of these minerals. Rather, deficiencies seem to occur secondary to other alcohol-related problems: decreased calcium absorption due to fat malabsorption; magnesium deficiency due to decreased intake, increased urinary excretion, vomiting, and diarrhea; iron deficiency related to gastrointestinal bleeding; and zinc malabsorption or losses related to other nutrient deficiencies. Mineral deficiencies can cause a variety of medical consequences from calcium-related bone disease to zinc-related night blindness and skin lesions.

Although alcoholic liver damage is caused primarily by alcohol itself, poor nutrition may increase the risk of alcohol-related liver damage. For example, nutrients normally found in the liver, such as carotenoids, which are the major sources of vitamin A, and vitamin E compounds, are known to be affected by alcohol consumption. Decreases in such nutrients may play some role in alcohol-related liver damage.

VII. Inference

Now it can be construed that various nutrients have their role in alcoholic liver damage.

Zinc deficiency affects cells reproduction; zinc malabsorption or losses related to other nutrient deficiencies Zinc depletion in the liver has been well documented in alcoholic patients as well as in animal models of ethanol-induced liver disease. Zinc also plays an important role in regulation of cellular glutathione (GSH) that is vital to cellular antioxidant defense The hepatoprotective effect of zinc on alcoholic liver injury most likely results from inhibition of oxidative stress. These results suggest that zinc may have a therapeutic potential in the prevention and/or treatment of alcoholic liver disease.

Alcohol can cause loss of calcium. Calcium needed for blood vessel and muscle contraction and expansion for the secretion of hormone and enzymes.

Iron deficiency anemia occurs when the body's iron supply cannot support the production of hemoglobin in adequate amounts to carry enough oxygen

Manganese: helps body to metabolize the macronutrients, protein, carbohydrate and fat. Regulation of the body’s metabolism is one of the vital functions of manganese. Manganese-activated enzymes help in the metabolism of cholesterol, amino acids, and carbohydrates. It is also important for the metabolism of Vitamins like Vitamin E and Vitamin B-1. Furthermore, it helps the liver to function properly. Manganese helps absorb vital vitamins like vitamin B and E and minerals like magnesium.

It is claimed that molybdenum prevents anemia,Iodine helps our thyroid gland to develop and function. It helps our body to metabolize fats,

Trivalent chromium (Cr (III)) ion is possibly required in trace amounts for sugar and lipid metabolism,

Copper works with iron to help the body to form red blood cells. It also helps to keep the blood vessels, nerves, immune system, and bones healthy .Lack of copper may lead to anemia and osteoporosis
Low sodium intakes have also been shown to directly reduce zinc retention

Sulfur Assists in some of the liver's drug-detoxifying pathways .It is component of some vitamins and amino acids.Iron accumulation over time can cause damage to various parts of the body. The result could be diabetes, liver cancer, cirrhosis of the liver Alcohol interferes with dietary folate intake, folate absorption, transport of folate to tissues, the storage and release of folate by liver
Phytates (wheat), alcohol, oxalates, stress, high calcium, high sugar intake, copper and low protein intake hampers the absorption of zinc
.Magnesium deficiency can occur in individuals with kidney disease, alcoholism or prolonged diarrhea
.Copper, zinc, and selenium are involved in destruction of free radicals through cascading enzyme systems
Alcohol inhibits absorption of folate and other vitamins by killing the cells lining the stomach and intestines that mediate the absorption of these nutrients .Alcohol inhibits fat absorption and thereby impairs absorption of the vitamins A, E, and D that are normally absorbed along with dietary fats...

Alcohol reduces the ability of the body to absorb the vitamin thiamin, also called vitamin B-1 that helps to break down carbohydrates, proteins and fat in the food. It also aids in production of hemoglobin, the protein that binds oxygen in red blood cells. A severe deficiency in thiamin leads to a life-threatening condition.

Alcohol may interfere with the body's ability to use vitamins. Breakdown of vitamin A also accelerates and may lead to vitamin A depletion in the liver. Sometimes acetaldehyde, a byproduct of alcohol oxidation, will bind with an amino acid, leading to reduced glutathione, an important substance in the liver. Glutathione helps scavenge toxic free-radicals.

The combination of beta-carotene with ethanol results in hepatotoxicity. Ethanol, while promoting a deficiency of vitamin A, also enhances its toxicity

Even in small amounts, alcohol will destroy vitamins B12, B6, and folic acid, Thiamin assimilation is blocked by alcohol consumption The use of alcohol lowers magnesium at a faster rate. Even a small amount of alcohol can drain magnesium reserves.

Potassium excretion increases after alcohol ingestion, thus alcohol is associated with potassium deficiency. Chronic (regular) alcohol use depletes selenium stores in the body Alcohol hastens the breakdown of the antioxidants in the blood, speeding its elimination from the body

The by-products of alcohol metabolism generate oxidants that can contribute to cell damage. An imbalance between oxidants and antioxidants (substances that neutralize oxidation) can create oxidative stress, a state marked by continued production of oxidizing agents and escalation of cell damage, alcohol greatly increases lead absorption.

The cumulative result is that hepatotoxicity develops, liver becomes unable to neutralize oxidants' scavenging capacity is lost. There is escalation of cell damage leading to degeneration of liver cells; regenerative capacity is lost. Here we need the drugs which have scavenging capacity to detoxify the liver, bioavailability are high, is anti oxidant, Defficiency of iron makes the task more difficult. Most of drugs used in liver disorder are herbal in nature. It transpires herbs have some synergetic effect to cure liver disorders.

Lead overload causes liver cells to become enlarged into hyperplasia (initiating the formation of tumors in the liver), and, similar to mercury, causes inflammation, oxidation, and increased blood LDL cholesterol levels. Liver cells die more rapidly and are replaced by fatty deposits. High levels of lead are associated with a 3x-increase in liver damage (high ALT levels).

VIII. Medicinal plants

Medicinal plants Have been traditionally used for treating liver diseases since centuries. Several leads from plant sources have been found as potential hepatoprotective agents with diverse chemical structures. Although, a big list of hepatoprotective phytomolecules was reported in the scientific literature, only a few were potent against various type of liver damage Out of which, the following have largely attracted the scientific community.

8.1 Long pepper, known to possess liver-protective functions, may help the body manage liver toxicity, and may also prevent jaundice. Indian long pepper contains a chemical called piperine. Piperine may be able to fight certain parasites that can infect people. It also seems to change the lining of the intestines. This change allows some drugs and other substances taken by mouth to be better absorbed by the body.
In P. retrofractum, piperine, piperlonguminine, sylvatine, guineensine, piperlongumine, filfiline, sitosterol, methyl piperate and a series of piperine-analog retrofractamides are reported.
Piperine increases thermogenesis. It also improves the bioavailability of the nutritive substances such as beta carotene, curcumin selenium, pyroxidine (B6), glucose and amino acids to the body

Studies at Regional Research Lab CSIR Jammu, have established that it is piperine that affects the bioavailability of drugs. The doses of many potent drugs can be drastically reduced when mixed with

piperamides.
Combination of Piper longum, Piper nigrum and Zingiber officinale enhances the drug bioavailability. Individually, Piper longum and Piper nigrum were found to be almost equally effective. (Ref: Medicinal Plants of India.)

Peppercorns are composed of health benefiting essential oils such as piperine, an amine alkaloid, which gives strong spicy pungent character to the pepper. It also contains numerous monoterpenes hydrocarbons such as sabinene, pinene, terpenene, limonene, mercene, etc., which altogether gives aromatic property to the pepper.

The above-mentioned active principles in the pepper may increase the gut motility as well as the digestion power by increasing gastro-intestinal enzyme secretions. It has also been found that piperine can increase absorption of selenium, B-complex vitamins, beta-carotene, as well as other nutrients from the food.

Black peppercorns contain a good amount of minerals like potassium, calcium, zinc, manganese, iron, and magnesium. Potassium is an important component of cell and body fluids that helps controlling heart rate and blood pressure. Manganese is used by the body as a co-factor for the antioxidant enzyme, superoxide dismutase. Iron is essential for cellular respiration and blood cell production.

They are also an excellent source of many vital B-complex groups of vitamins such as Pyridoxine, riboflavin, thiamin and niacin.Peppercorns are a good source of many anti-oxidant vitamins such as vitamin-C and vitamin-A. They are also rich in flavonoid polyphenolic anti-oxidants like carotenes, cryptoxanthin, zea-xanthin and lycopene. These compounds help the body removes harmful free radicals and helps protect from cancers and diseases.

8.2 Eclipta alba Hassk In traditional ayurvedic medicine, the leaf extract is considered a powerful liver tonic
The herb Eclipta alba contains mainly coumestans i.e. wedelolactone and demethylwedelolactone, polypeptides, polyacetylenes, thiophene-derivatives, steroids, triterpenes and flavonoids. Coumestans are known to possess estrogenic activity; Wedelolactone possesses a wide range of biological activities and is used for the treatment of hepatitis and cirrhosis, as an antibacterial, anti-hemorrhagic..
Eclipa prostrate is considered a very powerful liver tonic. The herb sets right liver and cures jaundice fatty liver etc. It is more effective when taken with P niruri.
It improves the functional status of hepatic drug metabolizing enzymes. It helps to purify blood and remove toxins.

Many of these therapeutic uses have now been confirmed by studies, and with regards to its liver-protective properties researchers have found that the plant is able to shield liver cells and protect them against harmful toxins (Indian J Physiol Pharmacol. 2001;45(4):435-41).

More promising still, recent research has uncovered additional, hitherto unknown about medicinal properties linked to the plant. This is hardly surprising, given the fact that Eclipta is packed full of health-giving ingredients. For example, it contains the chemicals ecliptine (which protects against liver problems), steroidal alkaloids (which help kill cancerous cells) and ecliptasaponin (which protects the brain against toxic damage).

Eclipta is commonly used as a deobstruent to promote bile flow and to protect the liverparenchymal tissue in viral hepatitis and other conditions involving hepatic enlargement. The fresh juice of the leaves is given in the treatment of edema, fevers, liver disorders, and rheumatic joint pains; it is also used to improve the appetite and to stimulate digestion

Eclipta prostrate is considered a very powerful liver tonic. It improves the functional status of hepatic drug metabolizing enzymes

8.3 Phyllanthus niruri

Phyllanthus niruri shows potential to prevent liver damage. In a 2007 study conducted by Rajesh Bhattacharjee and his associates, lab mice were injected with chemicals to induce liver damage. These mice were then treated with a protein isolated from P. niruri. Remarkably, the protein brought the liver back to almost normal conditions. Their results also suggest the protein isolated from P. niruri protects liver tissues and helps stimulate the liver to repair itself. Phyllanthus niruri has shown evidence of being anti-hepatitus B, Anti-liver damage

The active compounds phyllanthin and hypophyllanthin have been isolated from leaves. Recently, lignansniranthin, nirtetralin, and phyltetralin have been isolated from leaves. (Rastogi and Mehrotra, 1991) It is a major component of many popular liver tonics in India Fresh juice and powder of dried plant are used most frequently in Ayurvedic preparations (Sastry and Kavatherkar, 1991)

Alcohol is a toxin in higher doses and when it is associated with polyunsaturated fatty acids (PUFA) induces oxidative stress & hepatotoxicity. This can be efficiently reduced by P.niruri extract analyzed by the antioxidant potentials of liver enzymes and histopathological studies.

An aqueous extract of the plant Phyllanthus niruri inhibits endogenous DNA polymerase of hepatitis B virus and binds to the surface antigen of hepatitis B virus in vitro. The extract also inhibits woodchuck hepatitis virus (WHV) DNA polymerase and binds to the surface antigen of WHV in vitro.

8.3.1Benefits of Phyllanthus niruri Preliminary studies suggest that plants of the Phyllanthus genus may contain many compounds with health-enhancing properties, including antioxidants, lignans (a type of phytoestrogen), and tannins (a class of substances found to reduceinflammation).

In laboratory research, scientists have found that certain species of Phyllanthus may help prevent liver damage. For instance, a 2012 study from Pharmaceutical Biology determined that extracts of Phyllanthus polyphyllus, Phyllanthus emblica, and Phyllanthus indofischeri had high levels of liver-protecting activity.

Still, the authors did determine that using extracts of plants of the Phyllanthus genus in combination with an antiviral drug may be better than the same antiviral drug alone in treatment of hepatitis B infection

P niruri has been reported to exhibit marked Hepatitis B virus surface antigen activity. Infectous Hepatitis is due to the inability of the body's immune system to eliminate the virus from liver cells

P niruri might inhibit proliferation of virus by inhibiting replication of the genetic material of the virus.P niruri acts as protective shield and curative medicine for jaundice and other liver related diseases

The protein fraction of P niruri protects liver tissues against oxidative stress by impairing anti oxidative defence in mice P niruri extracts demonstrates lipid lowering activities. It is very useful in treatment of jaundice liver cirrhosis

It helps to repare fatty liver and liver damage due to any reason. It promotes liver action Inhibitory effect on human immunodeficiency virus. Regular intake in morning in empty stomach helps to get rid from toxins ccl4 induced hepatotoxic rats was studied. High level of malondialdehyde was observed. Significant reduction of MDA level in all group of P niruri extract admistration. Highest level of glutathione (GSH) was found in P niruri group.

A laboratory study found that an extract of P niruri had lipid lowering activity, mediated through inhibition of hepatic cholesterol biosynthesis, increased faecal bile excretion and enhanced plasma lethicin, cholestral acyltransferase activity.

8.3.2Keampferol is a strong antioxidant and helps to prevent oxidative damage of cells, lipids and DNA. Kaempferol seems to prevent arteriosclerosis by inhibiting the oxidation of low density lipoprotein and the formation of platelets in the blood. Studies have also confirmed that kaempferol acts as a chemopreventive agent, which means that it inhibits the formation of cancer cells.

P niruri have considerable amount of chemical compounds-protein lipid ash fibre and carbohydrate also mineral elements such as Fe Mn Zn Ca K P Cu & Cr

Under lab condition it has been observed that protein isolated from this plant was found to enhance cell viability against tertiary butyl hydroperoxide induced cytotoxicity and cell death.

It protects hepatocytes against thioacetamide induced cytotoxicity. The extract prevents the alterations i n GSH levels and it also reduces the lipid peroxidation induced by thioacetamide (TAA).Further it was found that the isolated protein has radical scavenging activity. This protein protects the liver from the carbon tetra chloride induced hepatotoxicity and this can be measured by the liver enzymes and reduced levels of antioxidant enzymes

P.niruri protects the liver from nimesulide induced liver toxicity The Phyllanthus niruri has the capacity to reduce the serum lipid levels

8.4 Boerhaavia diffusa

The root, leaves, aerial parts or the whole plant of Boerhaavia diffusa have been employed for the treatment of various disorders in the Ayurvedic herbal medicine (daily used by millions of people in India, Nepal, Sri Lanka and indirectly through it being the major influence on Unani, Chinese and Tibetan medicines). The root is mainly used to treat gonorrhea, internal inflammation of all kinds, dyspepsia, oedema, jaundice, menstrual disorders, anaemia, liver, gallbladder and kidney disorders, enlargement of spleen, abdominal pain, abdominal tumours, and cancers.

Hepatoprotective The hepatoprotective effects of B diffusa under lab model has been widely studied.

B. diffusa protects from hepatotoxic action of C.M. L. as evidenced by changes in serum alanine aminotransferase (ALT), Triglycerides (TG), Cholesterol and total lipid levels in both serum and tissues under lab conditions. Histopathological studies showed marked reduction in fat deposits in animals receiving B. diffusa along with C. M. L. An alcoholic extract of whole plant Boerhaavia diffusa given orally exhibited hepatoprotective activity against experimentally induced carbon tetrachloride hepatotoxicity in rats and mice. The extract also produced an increase in normal bile flow in rats suggesting a strong choleretic activity.

8.5 Andrographis is also used for a wide assortment of other conditions. It is used for digestive complaints; liver conditions including an enlarged liver, jaundice, and liver damage due to medications;

Preliminary studies in animals suggest that andrographis may offer benefits for preventing heart disease . In addition, highly preliminary studies suggest that andrographis may help protect the liver from toxic injury, perhaps more successfully than the more famous liver-protective herb milk thistle . It also appears to stimulate gallbladder contraction

Andrographis has not been associated with any side effects in human studies. In one study, participants were monitored for changes in liver function, blood counts, kidney function, and other laboratory measures of toxicity. No problems were found.

Finally, if androphraphis does indeed stimulate the immune system, this would lead to a whole host of potential risks. The immune system is balanced on a knife edge. An immune system that is too relaxed fails to defend us from infections, but an immune system that is too active attacks healthy tissues, causing autoimmune diseases. A universal immune booster might cause or exacerbate lupus , Crohn's disease ,asthma , Graves' disease, Hashimoto's thyroiditis , multiple sclerosis , and rheumatoid arthritis , among other illnesses.

The hepatoprotective action of andrographolide is related to the activity of certain metabolic enzymes (Choudhury and Poddar, 1984, 1985; Choudhury et al., 1987.

8.6 Tephrosia purpurea

According to traditional medicine system Ayurveda, plant is digestible, anthelmintic, alexiteric, antipyretic, alternative, cures diseases of liver, spleen, heart, blood, tumours, ulcers, poisoning etc. According to Unani system of medicine, root is diuretic, allays thirst, enriches blood, cures diarrhea, useful in bronchitis, asthma, liver, spleen diseases, inflammations, boils and pimples; Leaves are tonic to intestines and a promising appetizer.T purpurea is a famous herb used in treating various disorders like, 1. Alcoholic liver cirrhosis 2. Viral hepatitis 3. Pre-cirrhotic conditions4. Protein energy malnutrition 5. Radiation and chemotherapy induced liver damage6. As an adjuvant with hepatotoxic drugs like antitubercular drugs 7. Urinary tract anti-infective 8. Antibacterial in acne vulgaris and acts as a blood purifier

As spleen plays an important in maintenance of the RBCs; so T purpurea is very useful in maintaining normal hemoglobin level and functioning of blood. By improving the liver functions; it corrects the working of the digestive system and benefits in metabolic disorders also promotes increased bile production to help reduce levels of fat in the liver.

8.7 Radishes The reason that radishes do a great job of treating jaundice is because they are a powerful detoxifier which makes them good for both the stomach and liver by eliminating waste and toxins. The fact that they additionally remove bilirubin and keep production of this compound stable makes them a useful treatment for jaundice. They can even increase the blood's supply of oxygen and in turn help reduce the red blood cell destruction that jaundice causes

8.8 Aloe vera The juice is said to be one of the finest body cleansers, cleaning morbid matter from the stomach, liver, kidneys, spleen, bladder, and is considered the finest, known colon cleanser. Studies have shown that it is healing and soothing in the relief of indigestion, stomach distress and ulcers. Aloe is a powerful detoxifier, antiseptic and tonic for the nervous system. It also has immune boosting and anti viral properties. Aloe vera contains many minerals vital to the growth process and healthy function of all the body's systems. The ingredients in Aloe can be grouped into the following categories: Vitamins, Minerals, Sugars, Enzymes, Lignins, Amino Acids, Anthraquinones, Saponins, Fatty Acids, Salicylic Acid.

Researcher Robert Davis, Ph.D., an endocrinologist-biologist, explains that fifteen different compound groups of nutrients work together to make the plant effective. This means that Aloe vera's effects cannot be synthesized easily in a laboratory.

Aloe vera contains protein, calcium, magnesium, zinc, vitamins A and E and is naturally rich in:

Vitamin C, which helps to maintain tone of blood vessels and promotes good circulation and is essential to the health of the adrenal gland which supports our body in time of stress.

Amino acids are chains of atoms constructing protein in body.

Enzymes, which are the life-principle in every life, organic atom and molecule of natural raw food, rejuvenate aged tissues and promote healthy skin.

8.9 Turmeric is great for the liver. It protects it from the damage caused by eating foods that contain high amounts of fat and excessive alcohol consumption. A study published in the Journal of Nutrition , found that the anti oxidative, anti carcinogenic and hypocholesterolemic action (an action that lowers the amount of cholesterol in the blood) of turmeric – mitigated by the content of curcuminoids in it – helps lower the potentially damaging effects of excessive cholesterol on the liver. Since turmeric alters the way body metabolizes fatty acids, this action helps in keeping the liver healthy, and is vital to protecting the liver from diseases such as non alcoholic fatty liver disease and damage caused due to excessive accumulation of fats in and around the liver. In another study published in the American Journal of Physiology, it was found that the root had the potential to prevent alcohol-induced liver disease. The study found that the compounds in turmeric helped in blocking a particular gene that was linked to inflammation and necrosis of the liver due to excessive alcohol consumption. Turmeric was found to protect the liver from both biochemical and pathological damage caused due an unhealthy lifestyle.

In addition to their anticancer effects, antioxidants in turmeric protect the brain, kidneys, and liver from damage by alcohol, drugs, radiation, heavy metals or chemicals.

According to early experimental research at the Medical University Graz in Austria, the curcumin in turmeric may delay liver damage that can eventually lead to cirrhosis.

8.10 Paederia foetida Various studies strongly suggests the possibility of Paederia foetida being able to condition the hepatocyte so as to cause regeneration of hepatic homeostasis, acting against membrane fragility, decreasing the leakage of enzymes into the circulation. Stabilization of serum bilirubin and hepatic LPO levels through the administration of the extract is further a clear indication of the improvement of the functional status and structural integrity of the liver cells.

8.11 Cyperus scariosus, A 2006 study on 'Natural composition for curing hepatitis-B, methods for making the same and pharmaceutical formulations thereof' have proved that a natural antiviral composition with extracts of Cyperus rotundus or Cyperus scariosus and pharmaceutically acceptable carrier aids in treating disorders related to chronic and acute hepatitis B and certain other viral diseases of the liver. This is mainly due to the herb's positive effect on the liver, easing its detoxification and healing.

Hepatoprotective Activity**:** Study of ethanolic extract of the rhizomes of C speciosus on carbon tetrachloride treated rats showed significant hepatoprotective activity with a significant fall in liver enzymes supported by histopathological studies on the liver

8.12 Picrorhiza kurroa is one of the major income generating non-timber forest products found in the Nepalese Himalayas

The rhizome has a long history of use in Indian Ayurvedic medicine for the treatment of digestive problems. Other uses have been proposed (e.g. for asthma, liver damage, wound healing, vitiligo) but the medical evidence is not yet conclusive. It appears to be relatively safe based on its long history of traditional use

IX. Conclusion

When, body is overloaded with toxins such as alcohol or are exposed to increased levels of heavy metals, at a certain point the protective detoxifying capacity of the liver runs out. The healthy liver cells dysfunction or die Excessive and chronic alcohol consumption is the most common cause of liver cirrhosis. Alcohol destroys the cells lining in the stomach and intestines that mediate the absorption of nutrients. Alcohol greatly increases lead absorption. Deficiencies of minerals such as calcium, magnesium, iron, and zinc are common in alcoholics,

Kupffer cell activation is responsible for early ethanol-induced liver injury, which is common in chronic alcoholics

The damage of liver and other organs brought about by excessive alcohol consumption causes severe problem leading to vitamin and mineral deficiencies. Alcohol interferes with the body's ability to use vitamins. Breakdown of vitamin A accelerates and leads to vitamin A depletion in the liver. Sometimes acetaldehyde, a byproduct of alcohol oxidation, binds with an amino acid, leading to reduced glutathione. Even in small amounts, alcohol destroys vitamins B12, B6, and folic acid, Thiamin assimilation is blocked by alcohol consumption Use of alcohol lowers magnesium at a faster rate.

Eclipta is used for cleansing the bloodstream and assisting elevated contaminant removal. It improves the functional status of hepatic drug metabolizing enzymes. It helps to purify blood and removes toxins .Eclipta. prostrate is considered a very powerful liver tonic. The herb sets right liver and cures jaundice fatty liver etc. It is more effective when taken with P niruri.

Piper longum, (Indian long pepper) contains a chemical called piperine. Piperine seems to change the lining of the intestines. This change allows some drugs and other substances taken by mouth to be better absorbed by the body.

Piperine increases thermogenesis. It also improves the bioavailability of the nutritive substances such as beta carotene, curcumin selenium, pyroxidine (B6), glucose and amino acids to the body

Piper longum, is a warm and aromatic pepper-like herb which scrapes toxic build up from cell walls, arteries and tissues. Piper enkindles the digestive fire to assimilate more nutrients. It purifies lungs to promote fuller breathing. The fruit extract improves the regeneration process by restricting fibrosis

P niruri have considerable amount of chemical compounds-protein lipid ash fibre and carbohydrate also mineral elements such as Fe Mn Zn Ca K P Cu & Cr. Studies have confirmed that kaempferol acts as a chemopreventive agent, which means that it inhibits the formation of cancer cells. It has been further repoted that extracts of P niruri reduces the malanoaldehyde level.

Silymarin is a purified extract obtained from the seeds of the plant Silybum marinum and used widely as a supportive therapy for liver disorders such as cirrhosis, hepatitis, and fatty acid infiltration due to alcohol and toxic chemicals

Boerhaavia diffusa exhibits hepatoprotective activity against experimentally induced carbon tetrachloride hepatotoxicity in rats and mice. The extract also produced an increase in normal bile flow in rats suggesting a strong choleretic activity. The juice of Boerhaavia diffusa leaves is used as a blood purifier and to relieve muscular pain. It has regenerative capacity.

Aloe vera is finest body cleanser, powerful detoxifier with vitamin mineral enzyme and salicylic acid which rejuvenates body tissues

In addition, preliminary studies suggest that andrographis helps to protect the liver from toxic injury, perhaps more successfully than the more famous liver-protective herb milk thistle . It also appears to stimulate gallbladder contraction

T purpurea is effective in treating various disorders like, 1. Alcoholic liver cirrhosis 2. Viral hepatitis 3. Pre-cirrhotic conditions. 4. Protein energy malnutrition 5. Radiation and chemotherapy induced liver damage 6. As an adjuvant with hepatotoxic drugs like antitubercular drugs 7. Urinary tract anti-infective 8. Antibacterial in acne vulgaris and acts as a blood purifier

Turmeric protects the liver from both biochemical and pathological damage caused due an unhealthy lifestyle .In addition to their anticancer effects, antioxidants in turmeric protect the brain, kidneys, and liver from damage by alcohol, drugs, radiation, heavy metals or chemicals.

Radishes do a great job of treating jaundice is because they are a powerful detoxifier which makes them good for both the stomach and liver by eliminating waste and toxins. The fact that they additionally remove bilirubin and keep production of this compound stable makes them a useful treatment for jaundice.

Paederia foetida is able to condition the hepatocyte so as to cause regeneration of hepatic homeostasis, thus acting against membrane fragility, decreasing the leakage of marker enzymes into the circulation. Stabilization of serum bilirubin and hepatic LPO levels through the administration of the extract is further a clear indication of the improvement of the functional status and structural integrity of the liver cells.

Cyperus scariosus aids in treating disorders related to chronic and acute hepatitis B and certain other viral diseases of the liver. This is mainly due to the herb's positive effect on the liver, easing its detoxification and healing.extract of the rhizomes of C speciosus have significant hepatoprotective activity with a significant fall in liver enzymes

These herbs have potential hepatoprotective phytomolecules selective and careful use of these plants are helpful in treatment of alcoholic liver cirrhosis.ss

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