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Traditional Herbal Plants Used Treatment Of Hepatitis :A Case Review

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I. INTRODUCTION

Liver is the largest glandular organ in the body which works all the time to keep the body Healthy. The liver is important because a person's nutritional level is not only determined by What he or she eats, but by what the liver processes1.The incredible complexity of liver Chemistry and its fundamental role in human physiology is so daunting to researchers that The thought that simple plant remedies might have something to offer is astonishing andIncredible!Liver is considered to be one of the most vital organs that functions as a Centre of Metabolism of nutrients such as carbohydrates, proteins and lipids and excretion of wasteMetabolites. Additionally, it is also handling the metabolism and excretion of drugs andOther xenobiotic from the body thereby providing protection against foreign substances by Detoxifying and eliminating them.2 It is involved with almost all the biochemical pathways to Growth, fight against disease, nutrient supply, energy provision and reproduction. The bile Secreted by the liver has, among other things, plays an important role in digestion. Therefore, maintenance of a healthy liver is essential for the overall well-being of an Individual. Liver cell injury caused by various toxicants such as certain chemotherapeutic Agents, carbon tetrachloride, thioacetamide, chronic alcohol consumption and microbes are Common.Enhanced lipid per oxidation during metabolism of ethanol may result in development of Hepatitis leading to cirrhosis. Herbal drugs have gained importance and popularity in recent Years because of their safety, efficacy and cost effectiveness. The Indian Traditional Medicine like Ayurveda, Siddha and Unani are predominantly based on the use of plant Materials. The association of medical plants with other plants in their habitat also influences Their medicinal values in some cases. One of the important and well documented uses of Plant products is their use as hepatoprotective agents.Hence, there is an ever increasing need for safe hepatoprotective agent. In spite of Tremendous strides in modern medicine, there are hardly any drugs that stimulate liver Function, offerprotection to the liver from damage or help regeneration of hepatic cell. Many formulations containing herbal extracts are sold in the Indian market for liver Disorders but management of liver disorders by a simple and precise herbal drug is still an Intriguing problem. Several Indian medicinal plants have been extensively used in the Indian Traditional system of medicine for the management of liver disorder. Some of these plants Have already been reported to posse's strong antioxidant activity.It Is estimated that about 7,500 plants are used in local health traditions in, mostly, rural And tribal villages of India. Out of these,3 the real medicinal value of over 4,000 plants is Either little known or hitherto unknown to the main stream population. The classical Systems of medicine such as Ayurveda, Siddha, Amchi, Unani and Tibetan use about 1,200 Plants. A detailed investigation and documentation of plants used in local health traditions And pharmacological evaluation of these plants and their taxonomical relatives can lead toThe development of invaluable plant drugs for many dreaded diseases. Liver cell injury Caused by various toxic chemicals like certain-antibiotic, chemotherapeutic agents, carbon Tetrachloride (CCl_4), thioacetamide (TAA) etc. excessive alcohol consumption and microbes Is well studied. The available synthetic drugs to treat liver disorders in this condition also Cause further damage to the liver.4

Acute hepatitis may be caused by:

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 Viral infections such as hepatitis A, hepatitis B, hepatitis C, hepatitis D and hepatitis E, and Other viral diseases such as mononucleosis caused by cytomegalovirus, Severe bacterial Infections, Amoebic 5
 Increasing intake of medicines, e.g. acetaminophen (which can be hepatotoxic) and Halothane (an anesthetic) Poisoning from intake of alcohol, and fungal toxins, like toadstool Poisoning.6
 Chronic hepatitis is mainly caused by: Contagious viral infections such as hepatitis B,Hepatitis C and hepatitis7
 Hepatotoxic medicines such as isoniazid (INH) (antituberculosis), methyldopa (Aldomet) Adrenergic antihypertensive and tetracycline (an antibiotic), High alcohol intake8
 Inborn metabolic disorders, such as Wilson's disease (disorder of the body's copper Metabolism) and haemochromatosis (disorder of the body's iron metabolism)9
 Liver cancer, Cirrhosis of the liver, Incidence of the various disease conditions and its Associated risks are high, and is therefore a major health problem.10

Hepatitis A

Hepatitis A is an infection that causes inflammation of the liver.This disease is caused by the hepatitis A virus (HAV). This virus can be transmitted (passed On to other people) through contact with the feces of people infected with HAV. Transmission can occur from directly touching feces or by consuming food or water that has Been contaminated by fecal matter.Common symptoms of hepatitisAinfectioninclude fever, fatigue, abdominal pain, nausea,11Vomiting, and jaundice (yellowing of the skinandeyes).Symptoms usuallyappear 2 To6weeksafterexposure. Blood testscan showinflammationof theliver.Somepeoplehavemild Symptoms or no symptoms and may not even realize they are ill.There is no special treatment for this infection and symptoms usually go away within 2 Months. Once someone has had this infection, the body produces antibodies that prevent Reinfection. In rare cases, hepatitis A infection can lead to liver failure, especially in people Who have other reasons for liver disease.There is no special treatment for this infection and symptoms usually go away within 2 Months. Once someone has had this infection, the body produces antibodies that prevent Reinfection. In rare cases, hepatitis A infection can lead to liver failure, especially in people Who have other reasons for liver diseaseOutbreaksHepatitis A has been spread through numerous outbreaks, especially relatedTocontaminated fruitsandvegetablesboth freshand frozen.Hepatitis A virus can survive on The surface of produce and is not killed unless food is heated to at least 185°F (85°C) for 1-2 Minutes. Hepatitis A can also be spread through sexual activity (particularly in men who Have sex with other men) and is associated with injection drug use. Some large outbreaks of HAV infection have recently been reported among homeless people in the United States.12

PREVENTION:

The most important way to prevent hepatitis A is to get vaccinated. Vaccination is Recommended for all children at age 1 year and for people at high risk of hepatitis infection (including people who travel frequently to countrieswhereHAV is common).Men who have Sex with men, those who use injection drugs, and people with other forms of liver disease Should also be vaccinated There are 2 forms of vaccine to protect people from hepatitis A infection. One vaccine Protects against hepatitis A only and should be given as 2 injections at least 6 months apart. A second vaccine prevents infection with both HAV and hepatitis B virus, another virus Thatalso causes liver inflammation. Thisvaccine needs to be given as 3 injections over a Period of 6 months. Hepatitis A vaccine can also be given to patients who have been Exposed to HAV to prevent infection if done within 2 weeks of exposure to the virus.Another type ofmedication given by injection,immune globulin (a substance made from Human plasma containing antibodies to disease),is sometimes used along with hepatitis A Vaccine in patients with certain medical conditions (for example, compromised immune System, liver disease) who are traveling within 2 weeks. Immune globulin can be considered In travelers who cannot get the hepatitis A vaccine either because they are too young or Areallergic tocomponents of the vaccine.Regardless of vaccination status, everyone should wash their hands often to help prevent Hepatitis A.13

Hepatoprotective Herbs

Herbal-based therapeutics for liver disorders has been in use in India for a long time and has Been popularized world over by leading pharmaceuticals. Despite the significant popularity Of several herbal medicines in general, and for liver diseases in particular, they are still Unacceptable treatment modalities for liver

diseases.The limiting factors that contribute to this eventuality are:14

1. Lack of standardization of the herbal drugs
2. Lack of identification of active ingredient(s)/principles(s)
3. Lack of randomized controlled clinical trials (RCTs)
4. Lack of toxicological evaluation.15

The use of natural remedies for the treatment of liver diseases has a long history, starting With the Ayurvedic treatment, and extending to the Chinese, European and other systems of Traditional medicines. The 21st century has seen a paradigm shift towards therapeutic Evaluation of herbal products in liver disease models by carefully synergizing the strengths Of the traditional systems of medicine with that of the modern concept of evidence-based Medicinal evaluation, standardization and randomized placebo controlled clinical trials to Support clinical efficacy.16

Medicinal Plants

Azadirachta Indica (Neem Tree)

Effect of Azadirachta indica leaf (Family of Meliaceae) extract on serum enzyme levels (glutamate oxaloacetate transaminase, glutamate pyruvate transaminase, acid phosphatase And alkaline phosphatase) elevated by paracetamol in rats was studied with a view to Observe any possible hepatoprotective effect of this plant. It is stipulated that the extract Treated group was protected from hepatic cell damage caused by paracetamol induction. The findings were further confirmed by histopathological study of liver. The antihepatotoxic Action of picroliv seems likely due to an alteration in the biotransformation of the toxic Substances resulting in decreased formation of reactive metabolites.17

Curcumin

Curcumin is a main component of rhizomes of ancient spice, turmeric (Curcuma spp. Family: Zingiberaceae).Turmeric is grown in warm and rainy regions of the world such as China, India, Indonesia, Jamaica, and Peru.Apart from culinary use, turmeric has been used in traditional medicine for the treatment Of jaundice and other disorders of liver, parasitic infections, ulcers, inflammation of joints, Various skin diseases, etc. Curcuminoids are a mixture of several structurally close phenolic Compounds present in the rhizomes of turmeric (approximately 3–5% w/w). Three Curcuminoids of major occurrence are Curcumin (60–80%), demethoxycurcumin (10–20%), And bisdemethoxycurcumin (5–10%).The extracts of C. longa rhizomes exhibited protective activity against CCl4-induced liver Injury in vivo and in vitro. Curcumin has a very good antioxidant activity. Most of itsBiological activities are considered due to this only. It inhibits lipid peroxidation in rat liver Microsomes, erythrocyte membranes and brain homogenates. It is believed that the Hepatoprotective activity of Curcumin is due to its antioxidant activity which is comparable To vitamins C and E.18

Glycyrhizine

Glycyrrhizin, is a major and active constituent of roots of Glycyrrhiza glabra (Family: Leguminacae) commonly known as Indian licorice. It is a most commonly used herb in the Traditional medicine system of India, China and other countries.Glycyrrhizin prevents several forms of experimental liver injury in animals. It has shown Hepatoprotective activity in animal models against carbon tetrachloride induced toxicity and Hepatitis.The hepatoprotective activity of glycyrrhizin has been attributed to its lipid peroxidation Inhibitory, antioxidant, antiinflammatory, and immunomodulatory activities. It enhances Hepatic glucuronidation and activates P450 phase I detoxification reactions in animals.19,20

Rubia Cordifolia (Indian madder)

Rubiadin isolated from Rubia cordifolia Linn, (Family of Rubiaceae) at a dose of 50, 100 and 200 mg/kg was administered orally once daily for 14 days in rats. The substantially elevated Serum enzymatic activities of serum GOT, GPT, ALP and GGT; decreased activities of Glutathione Stransferase and glutathione reductase were restored towards normalization in Dose dependent manner which were induce by CCl4 treatment in rats. It also significantly Prevents the elevation of hepatic MDA formation and depletion of reduced GSH content in The liver.21,

Silymarin (Silybum)

Silymarin, derived from the seeds of Silybum marianum L. (Family: Asteraceae or Compositae), is a member of sunflower family and commonly called milk thistle. The plant Has been used for centuries as a natural remedy for liver and biliary tract diseases.Milk thistle protects and regenerates the liver in most liver diseases such as cirrhosis, Jaundice, and hepatitis.It acts as preventive medicine which protects liver cells fromincoming toxicants such as Alcohols, drugs,

medications, mercury and other heavy metals, pesticides, etc., and cleanses The liver from these harmful chemicals. The active extract of S. marianum, known as silymarin, is amixture offlavanolignans Namely; silibinin, silydianin, and silychristine. Although, the whole plant is used as medicinal, But seeds contain the highest content of Silymarin.Silibinin is the most active constituent in silymarin mixture. It showed antihepatotoxic Activity against Amanita phalloides, ethanol, paracetamol (acetaminophen) and carbon Tetrachloride induced liver injury.22

Solanum Nigrum (Black Nightshade)

The effects of Solanum nigrum (Family of Solanaceae) extract (SNE) was evaluated onThioacetamide (TAA) induced liver fibrosis in mice. Mice in the three TAA groups were Treated daily with distilled water and SNE (0.2 or 1.0 g/kg) via gastrogavage throughout the Experimental period. SNE reduced the hepatic hydroxyproline and L- smooth muscle actin Protein levels in TAA treated mice. SNE inhibited TAA induced collagen (L1) (I), transforming Growth factor-M1 (TGF-M1) and mRNA levels in the liver. Histological examination also Confirmed that SNE reduced the degree of fibrosis caused by TAA treatment. Oral Administration of SNE significantly reduces TAA induced hepatic fibrosis in mice, probably Through the reduction of TGF-B1 secretion

Taraxacum Officinale (Common Dandelion)

Traditionally Taraxacum officinale has been used as a remedy for jaundice and other Disorders of the liver and gall bladder, and as a remedy for counter acting water retention. Generally, theroots of the plant have the most activity regarding the liver and gall bladder.Oral administration of extracts from the roots of Taraxacum officinale has been shown to Act as a cholagogue, increasing the flow of bile. Bitter constituents like taraxecerin and Taraxcin are active constituents of the medicinal herb.23

Phyllanthin and Hypophyllanthin (Phyllanthus Niruri)

Phyllanthin and hypophyllanthin are potent hepatoprotective lignans found in Phyllanthus Niruri Linn. (Family: Euphorbiaceae)The plant is commonly known as ‘‘Bhuiamliki’’ in India and ‘‘Look Tai Bai’’ in Thailand.It is a wellknown Ayurvedic plant used in folk remedy for jaundice and other liver disorders. Chemically, both phyllanthin and hypophyllanthin are lignans.Phyllanthin is linked through C8–C80 of phenyl propanoid units, while hypophyllanthin is Additionally linked through C2–C70 to make a tetrahydronaphthalene ring system.The plant has been effective against infective hepatitis and other disorders of liver. The hexane fraction of the ethanolic extract showed potent hepatoprotective activity. Its Liver protective effects have been established by various in vitro and in vivo experiments in Rats and mice. Both phyllanthin and hypophyllanthin protect liver against carbon tetrachloride and Galactosamine-induced cytotoxicity in primary cultured rat hepatocytes. The liver protective Effect of phyllanthus extract was due to free radical scavenging activity.24

II. DISCUSSION

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 types of liver damages.Of which, silymarin, andrographolide, neoandrographolide, curcumin, phyllanthin, Hypophyllanthin, and glycyrrhizin have largely attracted the scientific community.This review focuses discussion on the chemistry, biological activity,mode of action, toxicity, And future prospects of these leads. The hepatoprotective potential of several herbal medicines has been clinically evaluated. Significant efficacy has been seen with silymarin, glycyrrhizin and Liv-52 in treatment of Hepatitis, alcoholic liver disease and liver cirrhosis.25

III. CONCLUSION

It is showed that many herbs have potential to treat different induced of hepatic diseases Especially Silybum marianum and Phyllanthus niruri. Phytochemicals obtained from herbs Can provide as suitable main compounds for effective hepatoprotective agents such as Antioxidant, antiinflammatory and antiviral properties. Herbs either single or combination Should possess adequate efficacy to treat severe induced hepatic diseases caused by Alcohol, viral and drugs. The class of phytochemicals in herbs such as flavanoids and Terpernoids received extensive attention due to their diverse pharmacological properties Especially in hepatic diseases. Antioxidants play crucial role in inhibiting and scavenging Radicals which eventually providing protection to human against hepatic diseases. In the Future, the effective

formulations for the combinations of phytochemicals have to be Developed using original medical plants which proper pharmacological experiments and Clinical trials. These combinations will promote to treat various inducing factors of hepatic Diseases.

 Chronic hepatic diseases stand as one of the foremost health troubles worldwide, With liver cirrhosis and drug induced liver injury accounting ninth leading cause of Death in western and developing countries.

 The rapies developed along the principles of western medicine are often limited in Efficacy, carry the risk of adverse effects, and are often too costly, especially for theDeveloping world. Therefore, treating liver diseases with plant-derived compounds Which are accessible and do not require laborious pharmaceutical synthesis seems Highly attractive.

 In this project, an attempt has been made to compile the reported hepatoprotective Plants from India and abroad and may be useful to the health professionals, Scientists and scholars working the field of pharmacology and therapeutics to Develop evidence-based alternative medicine to cure different kinds of liver diseases In man and animals.

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