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Review Article

A REVIEW ON CURATIVE EFFECTS OF HERBAL DRUGS ON VARIOUS CHEMICAL INDUCED HEPATOTOXICITY

Ashwani Kumar [1], Monika Singh *[2], Parsoon Kumar Saxena [2], Anshul [3], Neha Kashyap [3]
[1]Research Scholar, Department of Pharmacology, I.T.S. College of Pharmacy, Muradnagar, Ghaziabad, U.P, India
[2]Assistant Professor, Department of Pharmacology, I.T.S. College of Pharmacy, Muradnagar, Ghaziabad, U.P, India
[3]Research Scholar, Department of Pharmacy, I.T.S. College of Pharmacy, Muradnagar, Ghaziabad, U.P, India
*Corresponding Author Email: monikas@its.edu.in

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ABSTRACT

A possible risk factor of drug-induced hepatotoxicity is the metabolism of drug enzyme activity. Some drugs when used for prolonged or by overdose may induce hepatotoxicity. Chronic alcohol consumption, exposure of zinc oxide nanoparticles widely used in industry & cosmetics, reveals high potency risks of hepatotoxicity. Now, herbal medicines and formulations are developing to overcome liver injuries. Hepatoprotective effect of the goat milk, *Momordica dioica Roxb*., *Berberis aristata*. The aim of the present review is to compiling data on promising hepatotoxic as well as hepatoprotective agents.

KEY WORDS: Hepatotoxicity, Herbal plants, Hepatoprotective, Antioxidants.

INTRODUCTION

Generally, hepatotoxicity (liver dysfunction or liver damage) that occurs due to surplus of drugs or xenobiotics. Hepatotoxins or hepatotoxicants are the chemicals that produced the liver dysfunction or liver damage[1]. Hepatotoxicants are exogenous compounds, may include overdoses of certain medicinal drugs, industrial chemicals, herbal remedies and dietary supplements. Usually, hepatotoxic response is expressed, when hepatocytes, biliary epithelial cells and liver vasculature affected by toxicants[2]. More than 900 drugs have been concerned in causing liver injury and it is the most common explanation for a drug to be quiet from the market. Drug-induced liver injury is liable for 5% of all hospital admissions and 50% of all acute liver failures. More than 75 percent of cases of idiosyncratic drug reactions result in liver transplantation or death[3]. Liver pathology is a significant tool for identifying and characterizing liver injury. Main features of liver injury during hepatotoxicity may include zonal necrosis, hepatitis, cholestasis, steatosis, granuloma and vascular lesions diseases.

Zonal Necrosis: This kind of injury may be caused by exogenous substances like paracetamol and carbon tetrachloride. It may mark as an extremely high level of alanine aminotransferase and severe disturbance of liver function leading to acute liver failure.

Hepatitis: This type of liver injury shows hepatocellular necrosis associated with infiltration of inflammatory cells. It may be further characterized into three categories: viral, focal and chronic.

Cholestasis: This type of liver injury leads to destruction of bile flow, itching and jaundice. **Steatosis**: This type of liver injury may manifest as triglyceride accumulation which leads to either small droplet or large droplet fatty liver.

Granuloma: Hepatic granulomas are associated with granulomas located in periportal or portal areas and show features of systemic vasculitis and hypersensitivity.

Vascular Lesions: Such condition is caused by injury to the vascular endothelium[4].

AGENTS THAT CAUSES HEPATOTOXICITY

Drug induced hepatotoxicity is the most important cause of acute liver failure in many countries. Some of the medications causing hepatotoxicity as a potential side effect of various drugs. Aspirin, Ketoprofen, Tetracycline, Nucleoside reverse transcriptase inhibitors, Valproic acid, Acetaminophen and Methotrexate may lead to macrovesicular steatosis. Most tricyclic antidepressants are potentially hepatotoxic[5].

HEPATOPROTACTIVE AGENTS

Silibinin extracted from *Silybum marianum* commonly called as "Milk thistle" is used against several drugs-induced hepatotoxicity by significant increase in the activities of marker enzymes (aspartate and alanine transaminase, alkaline phosphatase)[6]. Chlorogenic acid stabilizes cell membrane; prevent hepatocyte apoptosis[7]. Hepatoprotective natural products such as *Andrographic paniculata, Chamomile capitula, Coccinia grandis, Flacourtia indica, Wedelia calendulacea, Annona squamosa, Prostecheamichuacana,* are reported[8]. Berberis species also known as Indian Barberry[9]. All species of the Berberis are rich source of vitamins, minerals, antioxidants, anthocyanin etc[10].Thymus vulgaris have protective effect on alcohol mediated hepatotoxicity. Virgin coconut oil with its

potent natural antioxidant property shows hepatoprotective effect against methotrexate induced liver toxicity and oxidative stress[11].

CONCLUSION

The liver plays a central role in transforming and clearing chemicals and is susceptible to the toxicity. Certain medicinal agents, when taken in overdoses and sometimes even when introduced within therapeutic ranges, may injure the organ. Other chemical agents, such as those used in laboratories and industries, natural chemicals and herbal remedies can also induce hepatotoxicity. Drug-induced hepatic injury is the most common reason cited for withdrawal of an approved drug. Knowledge of the commonly implicated agents and a high index of suspicion are essential in diagnosis.

In general, herbal medicines have been considered as safe by the general public, since they are naturally occurring and have been applied in treatment for over thousands of years. As the use of herbal medicine is rapidly increasing globally. In the present study we assume that traditional medicinal plant used in Ayurvedic, Chinese and other medicinal systems in the world for a long time may act as the potent hepatoprotective.

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