



Review: Therapeutic effect of Hepatotone against Acetaminophen

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Over the last few decades there has been increasing global concern over the public health impacts attributed to environmental .There is always some amount of environmental degradation. The World Health Organization (WHO) estimates that about a quarter of the diseases facing mankind today occur due to prolonged exposure to environmental pollution. Various chemical substances are released of the environment either by agriculture by industries and public health operations through the automobile exhausts. A large number of chemical substances remain dumped in various compartments of the environment. Incidences of chemical/drug induced hepatotoxicity are on the rise and provoke a need for a safe hepatoprotective agent in lieu of synthetic counterparts.

The liver is a vital organ of the digestive system present in vertebrates and some other animals. It Located in the upper-right portion of the abdominal cavity under the diaphragm, and surrounded by a thin capsule (Gilson's capsule) (Piper and Suzanne, 2012). Liver carries out three major physiological processes viz. production of bile, metabolism of nutrients and elimination of metabolic waste. Additionally, it is involved in

the detoxification and subsequent elimination of drugs and xenobiotics (Saleem et al., 2010), and maintenance of metabolic activity including glycogen storage, protein synthesis, production of biochemical's necessary for digestion (Toumy et., 2011; Sohaia and Salwa, 2011). Classically, the liver was seen being divided hexagonal lobule formed by parenchyma hepatocytes that constitute around 80% of total liver volume, and also by three different nonparenchymal cell types: sinusoidal endothelial cells, kupffer cells and hepatic stellate cells. The hepatocytes are important for the high metabolic activity of the liver and the secretion of the compound into the bile. The sheer complexity and multidimensional functions of liver makes it susceptible to many diseases. Fortunately, most are rare, but there are few that are all too common including hepatitis, cirrhosis, liver disorder in children, alcohol retarded disorders and liver cancer. Today, hepatorenal diseases are one of the fatal diseases in the world and this pose a serious challenge to the international public health. Thus, a healthy liver means an overall health and well being.

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**Some facts**

In overall causes of death in the U.S. and is the 5th 'big killer' in England & Wales (Bafna and Balaraman, 2013) about 5% of all deaths worldwide are the result of liver diseases. It ranks 9th

India is at the intermediate endemic level of hepatitis B with more than 40 million hepatitis B virus carriers accounting for 9 % of the total carriers worldwide (Rao, 2012).

Hepatitis or inflammation of the liver (Lavanchy., 2011).

Cirrhosis of the liver ranked as the thirteenth most common cause of mortality worldwide toward the end of the last decade. Chronic viral hepatitis due to hepatitis B virus (HBV) and hepatitis C virus (HCV) is the most common cause of cirrhosis and hepatocellular carcinoma in developing countries (Das *et al.*, 2010).

In North America 44% of deaths estimated from cirrhosis. About 5 - 20% of patients suffer with chronic hepatitis C, and 5 - 10% of patients have chronic hepatitis B (Health Guide, 2009).

Plant has traditional uses in Ayurveda in India. Medicinal plants have been a major source of therapeutic agents since ancient time to cure human diseases. Plant has a long history of medicinal usage. In last few years, the use of medicinal plants for the treatment of various diseases has been on increases all over the world. India has 16 agro-climate zones, 45,000 different plants species, and 15,000 species of medicinal plants. These medicinal plants contribute to 80% of the raw

materials used in preparation of Ayurvedic and Unani medicines. Millions of people in various traditional systems have been resorted to the use of medicinal plants to treat ailments. This could be a result of high cost of orthodox health care or lack of faith in it or may be as a result of global shift towards the use of natural rather than synthetic products (Imafidon, et., 2012). Several Indian plants have been listed in the Indian traditional system of medicine with claims of treating disorders associated with liver and also imparting hepatoprotection (Saleem et., 2010; Kumar et al., 2012). Traditional Indian systems of medicine such as Ayurveda, Unani, Siddha have gained importance and popularity in recent years because of their safety, efficacy and effectiveness (Kumar., 2012). The origin of new drug especially phytochemically obtained materials has again opened a vast area for research and development. Now a day there is many fold increases in medicinal plants based industries due to the increase in the interest of use of medicinal plants throughout the world which are growing at a rate of 7-16% annually. As per WHO about 80% of population in the world rely on the traditional medicines for the treatment of various diseases (Padmaa, 2010).

India is considered as Botanical garden of the World and more than 2200 medicinal and aromatic plants have been identified after studies.



The traditional systems of medicine together with homoeopathy and folklore medicine continue to play a significant role largely in the health care system of the population. A number of medicinal plants in traditional system of medicinal are used for the management of liver disorders.

Hepatotone syrup is a extract of polyherbal plants. It arrests the progress of the disease and prevent liver damage during inper-cirrhotic condition. Hepatoton eliminates acetaldehyde, the most toxic intermediate produced during alcohol metabolism and ensures protection from alcohol induced hepatic damage. It reduced inflammation of spleen, liver, bladder, kidney, intestine etc. It promotes balance and regeneration of liver cells and stimulate and billurubin levels. It is effective in liver enlargement, alchohol and drug induced hepatic damage, viral hepatitis and used in liver cirrhosis and during therapeutic management of hepatic disease, increase bile flow, pre-cirrhotic condition. There are some herbal plants used in hepatotone.

Eclipta prostrata commonly known as bhringraj , is a species of plant in the family Asteraceae. This species grows commonly in moist places as a weed in warm temperate to tropical areas worldwide. It is widely distributed throughout India, China, Thailand, and Brazil.. It is to improve hair growth and color.

Picrorhiza kurroa is Known as Kutki, It is found in the Himalayan region from Kashmir to Sikkim at an elevation of 2700-4500m and in Nepal, . The rhizome has a long history of

use in Indian Ayurvedic medicine for the treatment of digestive problems.

Tephrosia purpurea is a species of family, Fabaceae. It is found throughout India and Sri Lanka in poor soils. It is also used traditionally as folk medicine in Ayurveda, the plant is anthelmintic, alexiteric ,alterative, and antipyretic.

Phyllanthus niruri is a known as Bhumiamlki, belonging to the Phyllanthus genus of Family Phyllanthaceae. Phyllanthus niruri is an important plant of Indian Ayurvedic system of medicine which is used for problems of the stomach, genitourinary system, liver, kidney and spleen.(Vinod Kumar 2011).

Andrographis paniculata is an annual herbaceous plant in the family Acanthaceae, native to India and Sri Lanka. It is widely cultivated in Southern and Southeastern Asia, where it has been traditionally used to treat infections and some diseases.

Berberis aristata, known as Indian Barberry or Tree Turmeric, belongs to the family Berberidaceae and the genus Berberis. Berberineas antibacterial, antifungal, antiviral and antioxidant p roperities, anti-inflammatory, anti-tumor and anti-diabetic activities.

Swertia is a genus in the gentian family, used in Indian Ayurvedic Herbal System to cure Fever as in Laghu sudarshana churna, Maha sudarshan Churna and in Tibetan folk medicine. Swertia mileensis showed anti-hepatitis B virus activity in vitro.



Cichorium is a genus of flowering plants in the family Asteraceae. It grows as a wild plant on roadsides in Europe, and North America.

Aloe Vera is a succulent stemless herb found widely in India, China and many Egyptian countries, having more than 70 biologically active compounds. Many studies have shown antibacterial, antiseptic, anti-inflammatory and immunomodulatory effects of aloe Vera.

(Kanthari)- (Capparis sepiaria) is a flowering plant in the family Capparaceae. plants are shrubs or lianas known as caper shrubs or caper bushes. Capparis species occur over a wide range of habitat in the subtropical and tropical zones in India.

Boerhavia diffusa is commonly known as punarnava. It is taken in herbal medicine for pain relief and other uses. The leaves of B. diffusa are often used as a green vegetable in many parts of India. Boerhavia diffusa has shown antibacterial activity, antioxidant and hepatoprotective properties.

Amalki (Emblica officinalis) is known as amla, is a deciduous tree of the family Phyllanthaceae. Indian gooseberry has demonstrating in vitro antiviral and antimicrobial properties.

Haritaki (terminalia chebula) is a species of Terminalia, native to southern Asia from India and Nepal, China, Sri Lanka, Malaysia and Vietnam. Its fruit has digestive, anti-inflammatory, anthelmintic, cardioprotective, aphrodisiac and

restorative properties and is additionally beneficial in flatulence, constipation, piles, cough and colds.

Oldenlandia is a genus of flowering plants in the family Rubiaceae in distribution and has about 240 species. Some species are important in ethnomedicine.

Tinospora cordifolia, is known by the common names Guduchi and Giloy, is an herbaceous vine of the family Menispermaceae indigenous to the tropical areas of India, Myanmar and Sri Lanka. In Ayurveda, Guduchi is considered one of the most divine herbs.

Embelia ribes, commonly known as False Black Pepper, White-flowered Embelia, is a species in the Myrsinaceae. It is widely distributed throughout India. In Ayurveda, it is widely beneficial in variety of diseases and used in homeopathy.

Paracetamol also known as **acetaminophen** or **APAP**, **chemically named N-acetyl-p-aminophenol**, is a widely used analgesic (pain reliever) and antipyretic (fever reducer) and commonly used for the relief of headaches and other minor aches and pains and is a major ingredient in numerous cold and flu remedies. It is significantly more toxic in overdose but may be less toxic when used chronically. Paracetamol is not considered carcinogenic at therapeutic doses. The World Health Organization (WHO) recommends that paracetamol only be used for pain relief. Acute overdoses of paracetamol can cause potentially fatal



liver damage used to treat fever in children "Acetaminophen can cause serious liver damage if more than directed is used. Paracetamol toxicity is the foremost cause of acute liver failure in the Western world and metabolized by the liver and is hepatotoxic; side effects are multiplied when combined with alcoholic drinks in chronic alcoholics or patients with liver damage. Kidney damage is seen in rare cases, most commonly in overdose magnitude than the therapeutic benefits conferred. Paracetamol due to hepatotoxicity risks of greater. Paracetamol is approved for reducing fever in people of all ages. The World Health Organization (WHO) recommends that paracetamol only be used to treat fever in children if their temperature is greater than 38.5 °C (101.3 °F). The efficacy of paracetamol by itself in children with fevers has been questioned and a meta-analysis showed that it is less effective than ibuprofen.

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