



Significant Role of Antioxidants in the Treatment of Liver Disease

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Description

Alcohol abuse is a major cause of liver disease worldwide. Any malfunction or dysfunction of the liver leads to serious organ damage, which in turn affects the health of the individual. Alcohol-induced liver disease includes fatty liver, hepatitis, cirrhosis, fibrosis, alcohol hepatitis and finally hepatocellular carcinoma. Oxidative stress has been considered a combined pathological process, and contributes to the onset and progression of liver damage. Antioxidants, phytochemicals, such as polyphenols, regulate the expression of ALD-related proteins and peptides, namely, catalase, superoxide dismutase, glutathione, glutathione peroxidase, and glutathione reductase. Antioxidant use means a sensible treatment strategy to prevent and treat liver diseases including oxidative stress.

Antioxidants for prevention and treatment of alcoholic liver diseases

In recent years, a large number of natural plants have been tried to eliminate ethanol-induced liver damage in a variety of animals, and bioactive compounds responsible for oxidative stress release are commonly misdiagnosed in polyphenols and flavonoids compounds. For example, green tea, which has been found to contain many soluble antioxidants, has been shown to have a positive effect on the antioxidant capacity of rat liver by chronic ethanol treatment. It was shown that a significant decrease in enzymatic and non-enzymatic levels of antioxidant levels, as well as increased lipid levels and protein conversion was due to dietary ethanol. After the administration of green tea, interestingly, the activity of enzymes and the level of non-enzymatic antioxidants as well as lipid and protein oxidation products were partially normalized.

Antioxidants for Prevention and Treatment of Non-Alcoholic Fatty Liver Diseases (NAFLD)

Non-Alcoholic Fatty Liver Diseases (NAFLD) is character-

ized by abnormal fatty acids deposition in the liver cells without excessive alcohol consumption, viral infections or other hepatotoxins, including a broad spectrum of histological irregularities. Significantly, obesity is considered a major risk factor for NAFLD development and a major driver of NAFLD rapid growth. Oxidative stress of the endoplasmic reticulum caused by free fatty acids in the liver may contribute to hepatic damage, progressive fibrosis and even cirrhosis. Some antioxidants or plants tried to reduce liver damage caused by high-fat diets in experimental animals, indicating that most of them showed antioxidant and hepato-protective effects.

Among the described antioxidants, curcumin, naringenin, and quercetin have been found to be effective antioxidants in the treatment of experimental liver damage. Green tea has been shown to protect against various types of cancer in clinical trials but not in hepatocellular carcinoma.

Curcumin: Curcumin is also known as diferuloylmethane. It is found in the rhizomes of *Curcuma longa* and has a many medicinal properties that include strong antioxidant, anti-fibro genic, anti-inflammatory, anti-microbial, and anti-cancer actions in addition to healing effects.

Quercetin: It is a flavonol found in natural products, especially in apples and onions. Quercetin is known to have biological effects that include heavy metal chelation, anti-carcinogenic, cardio protective, bacteriostatic, anti-inflammatory, and antioxidant properties, in addition to acting as a hepatoprotective agent.

Naringenin: Naringenin is a flavanone found in citrus fruits and tomatoes. Naringenin has many medicinal properties including hypolipidemic, anti-hypertensive, anti-inflammatory, antioxidant and anti-fibrotic activities.