

Liver as target organ of carcinogenesis by xenobiotics

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The liver is a metabolically versatile organ responsible for the regulation of man's internal chemical environment. The main function of liver is to synthesize an array of body proteins and to act as the detoxifying centre for the multiple toxic metabolic byproducts endogenous to the body and the toxins ingested daily by the organism. The liver's main function is to synthesize an array of body proteins and to act as the detoxifying centre for the multiple toxic metabolic byproducts endogenous to the body and the toxins ingested daily by the organism. Unique metabolism and relationship of the liver to the gastrointestinal tract make it an important target of the toxicity of the drugs and xenobiotics. Therefore examination of blood and liver become significant to help in the diagnosis and treatment of the diseases. The liver undergoes dramatic changes in structure and function during development. The developmental changes that occur in the liver determine the rate and metabolic pathways used in the disposition of drugs and other xenobiotic. In toxicology liver plays an important role because all substances absorbed by the gastrointestinal tract pass through it before entering into the general circulation. Blood is highly specialized liquid connective tissue. Some toxicants cause direct injury to liver and others convert the chemicals into toxic substance through metabolic conversion. The classification may focus on the source and the chemical class of the toxicant, on the circumstances of exposure on the type of hepatic lesion produced, on the cell structure damaged or on the molecular or cellular mechanisms involved. Idiosyncratic reaction is attributable to pharmacogenetic differences between individuals (genetic polymorphism in the metabolism of compounds). In the case of severe toxicity the patient may develop liver failure. Cytotoxic injury resembles acute hepatitis and is characterized by damage to the hepatocytes with prominent elevation of amino transferase. Severe case may result in fulminant liver failure. Due to the presence of different types of cells blood has varied functions and analysis of its components helps in evaluating the abnormal conditions which create pathological conditions in a person. Therefore examination of blood and liver become significant to help in the diagnosis and treatment of the many diseases including cancer.

Biography

Rajesh K. Bhaskar worked as Guest Faculty in the Department of Molecular Biology, Kannur University, Kerala, India and doing his Ph.D. in the School of Biosciences, Mahatma Gandhi University, Kottayam, Kerala, India. He has paper publications in reputed journals like Indian Journal of Fisheries (ICAR).

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Increasing the efficacy of giant knotweed for improving crop yield

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Regalia is the leaf extract of *Polygonum Sachalinensis* used as plant protectant. It boosts the plant immunity by increasing the activity of chalcone synthase and chalcone isomerase in the phenyl propanoid pathway and induces the production and accumulation of phytoalexins. Activities of pathogen related proteins such as chitinase, glucanase and peroxidase are increased. Then it also increases the papillae formation at pathogen penetration site as well as lignification of plant cell wall. But this Regalia inhibits the plant growth due to the pigment Emodin. Now we insert a second gene of Emodin in antisense direction into the Knotweed genome. When the antisense gene is expressed it interferes the production of Emodin. Now we can use the leaf extract of this Giant Knotweed as a foliar spray in controlling a wide range of fungal and bacterial diseases, such as powdery mildew of cucurbits, downy mildew of lettuce (*Bremia lactuca*), Botrytis of grapes and strawberries, bacterial spot of tomatoes and peppers (*Xanthomonas campestris* pv. *vesicatoria*), *Cercospora* on soybeans (*Cercospora kikuchii*) and bacterial canker on citrus (*Xanthomonas axonopodis* pv. *citri*).

Biography

Pushkar Tatiya is pursuing his B. tech in Biotechnology at the age of 19 years from SRM University. He is in his 3rd year of engineering. He is working on a project of crop improvement.

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