Toxicological Evaluation of A Siddha-Medicine Based Poly-Herbal Formulation in Chang Liver Cell Line

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ABSTRACT

Drug-induced hepatotoxicity serves as a potential initiating factor favouring the onset of several hepatic diseases, and therefore urges for developing effective strategies of management. Although several years of molecular and clinical research have revealed that the sole modulation of drug-specific metabolic and signalling pathways can trigger the apoptosis and necrosis of hepatocytes, recent reports have suggested and strengthened the finding that initial upstream modulations and successive downstream attenuation of drug-specific molecular mechanisms, together supported by genetic, epigenetic and environmental factors shall synergistically promote and progress drug-induced hepatotoxicity. It often interferes with the uptake, excretion and conjugation of bilirubin and biliverdin, and leads to several other clinical complications like Liver Cirrhosis and Fibrosis, Chronic Hepatitis and Steatohepatitis, Hepatic Cytolysis, Cholestasis, Phospholipidosis, Fatty liver, and Hepatocellular Carcinoma. Anti-Tubercular drugs like Rifampin and Isoniazid continue being potential inducers of idiosyncratic hepatotoxicity worldwide. Pharmacological and toxicological investigations towards understanding the cellular susceptibility to anti-Tubercular drug-induced idiosyncratic hepatotoxicity have identified the generation and accumulation of highly-reactive free-radicals and cytotoxic metabolites, and have unravelled the cellular and extracellular factors that govern the antioxidant defence mechanism, which together determine the extent of hepatic cytolysis. Poly-herbal formulations have lately acquired greater scientific attention, accounted by their high efficacy even at low doses, assured safety even at high dosages, and broader therapeutic range against multiple targets and various diseases. The current work attempted to evaluate the cytotoxic effects of a Siddha-medicine based poly-herbal formulation in Chang Liver Cell line and compare its cytotoxicity with commercial anti-tubercular drugs over varying doses.

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