



ABSTRACT

Sericin is a protein component of the silk cocoons which exhibit antioxidant, antitumor and radical scavenging capacity. It is both biodegradable and biocompatible. Hepatocellular carcinoma (HCC) is the highly recurrent type of primary liver cancer surpassing one million novel cases and persists to be the third principal source of cancer-related death worldwide. The recent study was aimed at evaluating the anticancer effect of silk sericin against hepatocellular carcinoma induced by carbon tetrachloride in mice. Mice were divided into six groups as follows: First group was control group consisting of five mice that received olive oil (0.15 mL), second group having five mice received sericin (2%) twice weekly, third group having fifteen mice received carbon tetrachloride (0.5 μ l/g) intraperitoneally twice weekly for four consecutive weeks, fourth group having five mice received cisplatin (1 mg/kg), fifth group having five mice were given the combination of both CCl₄ (0.5 μ l/g) and sericin (2%), while the sixth group having five mice received both CCl₄ (0.5 μ l/g) and anticancer drug cisplatin (1 mg/kg). After four weeks of CCl₄ induction, the mice in the group 3 were divided into three subgroups comprising of five mice each, subgroup 1 mice were sacrificed; subgroup 2 mice were treated with sericin (2%) while the subgroup 3 mice were treated with cisplatin (1 mg/kg) drug thrice weekly for four consecutive weeks. Blood sampling was done for analyzing different hematological parameters such as RBC, WBC, Hb, HCT, MCV, MCH, platelets, neutrophils, lymphocytes, monocytes, eosinophils and several biochemical parameters of liver like alkaline phosphatase (ALP), lactate dehydrogenase (LDH), gamma glutamyl transferase (GGT), aspartate aminotransferase (AST), alanine aminotransferase (ALT), and bilirubin. Serum samples of model of CCl₄ induced HCC mice elicited significant elevations in tumor markers alkaline phosphatase (ALP), lactate dehydrogenase (LDH), gamma glutamyl transferase (GGT), aspartate aminotransferase (AST), alanine aminotransferase (ALT), and bilirubin. The oral administration of silk sericin as a chemoprotective agent yielded significant decreases in the levels of tumor markers for instance AST, ALT, LDH, GGT, ALP and bilirubin. The intraperitoneal administration of CCl₄ in mice produced significant elevation in the levels of WBC, MCV, MCH, platelets, neutrophils, monocytes, eosinophils,



monocytes, eosinophils, lymphocytes and significant decline in the levels of RBC, HCT, and Hb. The administration of sericin as a chemoprotective agent elicited significant decline in the levels of WBC, MCV, MCH, platelets, neutrophils, monocytes, eosinophils, lymphocytes and significant elevation in the levels of RBC, HCT, and Hb. The histological examination of different groups was done. The histology of the liver of the mice of control, cisplatin and sericin showed normal morphology whereas the section of the liver of CCl₄ group suggested the features of HCC. The prevention and treatment of mice with cisplatin and sericin in the CCl₄ intoxicated groups showed improved form of HCC. This study therefore, suggested the toxicity of CCl₄ to liver on biochemical and hematological parameters of the mice as well as the protective role of sericin on these parameters