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Effects of Silk Fibroin Powder on Detoxification of Alcohol-Induced Hepatotoxicity in C57BL/6J Mouse

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Recently, non-apparel applications of silk fibroin have been increased because of silk fibroin composition. Since silk fibroin is mainly composed of amino acids, that brings silk fibroin more bio-compatibility to human body. Furthermore, it has been suggested that silk fibroin may have specific pharmacological functions, for example, promoting alcohol metabolism in liver, it draws more interests to investigate its pharmacological roles. In this report, we studied the effects of SF on the detoxification of liver from alcohol-induced hepatotoxicity in the alcohol preference mouse. To enhance more absorption of SF in experimental animals, molecular weight of SF was lowered by hydrochloric acid or alcalase (EC 3.4.21.14) digestion methods. SF was added to liquid diet with alcohol and fed to the alcohol preference mice for 4 weeks. To assess the liver function, the concentration of alanine aminotransferase (ALT), aspartate aminotransferase (AST), alcohol dehydrogenase (ADH), aldehyde dehydrogenase (ALDH) and cholesterol in either blood or liver tissue were measured. Compared to non-SF treated group, the SF-treated showed significant low concentrations of ALT, AST, ADH, ALDH and cholesterol. Histopathological examination revealed that the extent of hepatocyte injury in SF treated group was reduced when it was compared non SF-treated group. These results indicate that SF may have liver protective effects against alcohol-induced hepatotoxicity.