

Alcohol Induced Hepatic Fibrosis in Pig

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Abstracts: Hepatic disease has been noted and reported for involvement various detrimental factors. Among many detrimental injury factors, alcohol has been noted for hepatitis, fatty liver, fibrosis, and hepatic cirrhosis. The purpose of this study is to develop animal model for hepatic fibrosis in pig with ethanol, and to search new anti-fibrogenic agent. Twelve male Landrace pigs were divided into 3 groups of 4 animals each. Group 1, 2 and 3 were fed with ceramic water only, ceramic water + liquid diet containing 20% ethanol and normal tap water + containing 20% ethanol for 12 weeks, respectively. At week 12, all pigs were immediately sacrificed for collection each tissue and blood. Serologically, serum ALT and AST levels were significantly reversed in group 2, comparing to group 3. They were normal range in pigs of group 1. Microscopically, macrovesicular lipid droplets and moderate necrosis were evident in the tap water + ethanol fed group 3. However, ceramic water intake group 1 showed normal. Moreover, in group 3, little fatty changes and mild necrosis were observed. Collagen fibers were detected in the spaces of surrounding periportal and interlobular areas in the group 3 of tap water + ethanol, but collagen synthesis and its thickness of fibrotic septa connecting portal tracts was markedly reduced in the group 2 of ceramic water + ethanol. In immunohistochemistry, myofibroblasts were detected in the ethanol and tap water treated group 3. No or a few myofibroblasts were observed in groups 1 and 2. CYP 2E1 was rarely detected in group 1 fed ceramic water. However, group 2 showed slightly activation of CYP 2E1 in the area of pericentral, while CYP 2E1 was significantly activated in group 3 fed tap and ethanol.

Taken together above, alcohol fibrosis model in pig was established. Furthermore, ceramic water had an inhibitory and protecting ability for alcohol-induced hepatic damages.