

Eugenol Effects on Metabolic Syndrome Induced Liver Damages

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Abstract : Metabolic syndrome (MetS) is a set of risk factors associated with cardiovascular diseases, atherosclerosis, and type 2 diabetes. Nonalcoholic fatty liver disease (NAFLD) is the most important liver disorder in metabolic syndrome. High fructose consumption increases the risk of NAFLD. Eugenol shows anti-thrombotic, insulin-sensitive, fat-reducing effects. This study was designed to investigate the protective role of eugenol in NAFLD caused by metabolic syndrome. Methods: Thirty male Wistar rats were randomly divided into five groups; group 1, drinking water intake animals; group 2, fructose, group 3, fructose+eugenol solvent; group 4, fructose+ eugenol 50mg/kg and group 5, fructose+ eugenol 100mg/kg. At the end of the experiment, after 12 hours of fasting and under anesthesia, blood samples were taken for measurement of fast blood glucose (FBS), SGOT, AGPT, LDL, HDL, cholesterol, triglyceride. Results: FBG significantly increased in group 2 compared to group 1 ($p < 0.001$); however, it significantly decreased in groups 4 and 5 compared to group 2 ($p < 0.05$). SGOT and SGPT levels significantly increased in group 2 compared to drinking water alone ($p < 0.001$). However, SGOT and SGPT levels significantly decreased in groups 4 and 5. MDA and LTDS significantly increased in group 2 compared with drinking water alone ($p < 0.01$), while MDA and LTDS decreased in 4 and 5 groups compared to group 2 ($p < 0.05$), which confirms the pathology results related to the liver damage. Conclusion: Eugenol has protective effects on the liver and fat accumulation in liver cells.

Keywords : eugenol, fructose, metabolic syndrome, nonalcoholic fatty liver disease

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