Abstract

Background: Hyperlipidaemia is a highly prevalent condition worldwide. Its underlying pathology results in fatal conditions such as coronary artery disease and strokes of several major organs. Thus, diagnosis and management has become of great interest. Literature shows promising antihyperlipidemic effect of conventional green tea extract in cases of high fat diet induced hyperlipidaemia. **Objective:** The aim of this study is to assess the possible enhancements in the lipid profile that may arise from regular administration of green tea extract. This evaluation will focus on cases where hyperlipemia is induced by an atherogenic diet. Additionally, the study aims to distinguish the impact of green tea extract from that of simvastatin. Furthermore, this study aims to clarify the impact of this substance on liver tissue in regard to non-alcoholic fatty liver disease, and to compare the hepatoprotective properties with low dosage simvastatin. **Subject and methods:** This research is an in vivo study conducted on male Sprague-Dawley rats. Divided to 4 group: negative control (NC) on standard diet, positive control (PC) on an atherogenic diet without medication, green tea group (GT) receiving a high fat diet and treated with 2 g/ kg green tea, and simvastatin group (SIM) receiving 20 mg/kg/day, in addition to the hyperlipidemic diet. After 3 weeks the animals were fasted overnight and sacrificed for blood and tissue collection. **Result:** Results indicate that green tea significantly lowered total cholesterol (from 192.00 ±62.1 to 261.33 ±18), plasma triglycerides (from 124 ±20.71 to 58.08 ±9.9), LDL (from 262.43±79.126 to 114.14± 32.7) and VLDL (from 41.00±4.577 to 11.71±1.634) ($p < 0.05$) relative to positive control group and comparable to SIM group ($p > 0.05$). GT showed promising liver tissue restoring and protection activity comparable if not superior to simvastatin. **Conclusion:** Green tea has significant hypolipidemic and hepatoprotective effects equivalent to low dose simvastatin. **Key words:** Atherogenic diet, Anti-hyperlipidemic, Green tea aqueous extract.