Effect of hydroalcoholic extract of Ruta graveolens on the serum alanine transaminase levels in hypercholesterolemic rats

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Abstracts

Introduction: In modern society, change in the pattern of food consumption increases metabolic syndrome such as obesity, atherosclerosis, hypertension, stroke, diabetes and cancer. In particular, hyperlipidemia is the main cause of health problems in metabolic syndrome. The high fat diet (HFD) increase levels of cholesterol and triglycerides. Hypercholesterolemia is an important risk factor of cardiovascular diseases (CVD) and also cause damages in many tissues such as liver,brain,testis, and so like and increase lipid peroxidation and oxidative stress. Also, the HFD causes liver damage and increases levels of alanine transaminase (ALT) and aspartate transaminase. Ruta graveolens (rue) is an evergreen plant in the Mediterranean area with a strong aroma and a very intense bitter taste from Sidapiles order. Rue was one of the oldest plants which had been used in Iranian and nation's Traditional medicine. Due to the hypolipidemic effects of rue and the increased prevalence of HFD's problems, we decided to examine the effect of hydroalcoholic extract of the rue's aerial parts on the serum ALT levels in hypercholesterolemic rats.

Materials and Methods: In this interventional trial, 28 adult rats with 150-170g weight were prepared and divided into 4 groups randomly: control(1), hypercholesterolemic(2), control treated with the extract of rue(3) and hypercholesterolemic treated with the extract of rue(4). Groups 1&3 rats were fed with normal diet and groups 2&4 rats were fed with 1%cholesterol-enriched diet without any restriction for 8 weeks. After that, groups 3&4 were given 100mg/kg of the hydroalcoholic extract of rue's aerial parts by intraperitoneal injections. Blood samples from eye venous network of rats were given at the end of hyperlipidemia and at the end of extracts injection and after centrifugation, levels of ALT in serum samples were measured and results were analyzed by ANOVA method.

Results: Results show that prescription of hydroalcoholic extract of rue to the group receiving HFD, significantly decreased serum ALT levels(54.9U) compared to the

group receiving only HFD(57.87U)($p<0.05$). In the group receiving HFD, ALT levels(57.87U) had a significantly increased than the control group(47.5U) ($p<0.05$). Also prescription of hydroalcoholic extract of rue to the control group changed ALT levels as compared to the control group($p<0.05$). Conclusion: Due to hypolipidemic effects of rue and effect of rue extract on decrease of hepatic enzymes activity, it can be an appropriate suggestion to improve liver function especially in hypercholesterolemic persons.

Keywords

Ruta graveolens, Hyperlipidemia, Alanine Transaminase