Effect of quercetin on experimental hyperlipidemia and atherosclerosis in rabbits

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Abstract:
Cardiovascular disease is currently the leading cause of death in the West, and a search for factors limiting its occurrence is ongoing. Accumulated data indicate that quercetin, the major flavonol in the plant kingdom, may possess beneficial effects in atherosclerosis. The present study aimed at determination of effects of quercetin on hyperlipidemia and development of atherosclerotic lesions in two animal models, i.e. diet induced hyperlipidemia and aortic atherosclerosis, and in injured carotid artery in rabbits fed high-fat diet for 12 and 4 weeks, respectively. It was demonstrated that quercetin was effective in reducing serum triglycerides and cholesterol levels elevated by high-fat diet, after 12 weeks of the experiment. This activity was less prominent in the 4-week study in injured carotid artery rabbit model. Hypolipemic properties of the flavonoid were associated with the reduced formation of atherosclerotic plaques, both in the aorta (12-week study) as well as within injured carotid artery (4-week study) in high-fat diet-fed animals. The surface of the intima covered with atherosclerotic plaques in high-fat diet-fed rabbits was 24.6 ± 33.1% in comparison to 0.7 ± 1.3% (p < 0.05) in quercetin and high-fat diet supplemented animals. It is evident from the present study that quercetin possesses both hypolipemic and antiatherogenic properties.

Key words:
atherosclerosis, hyperlipidemia, quercetin, rabbit