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The vascular protective effects of trihoney in hypercholesterolemic atherosclerotic rabbits, a comparative study with atorvastatin

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Abstract
Atherosclerosis is a chronic inflammatory disease of the inner wall of large- and medium-sized arteries. The histopathological lesion of atherosclerosis is the atherosclerotic plaque. This study aimed to investigate the vascular protective effects of trihoney against the development and progression of atherosclerotic plaques. Thirty male New Zealand white (NZW) rabbits were grouped into six groups, comprising five rabbits per group as follows: normal diet (C), normal diet with 0.6 g/kg/day of trihoney (C + H), 1% cholesterol diet (HCD), 1% cholesterol diet with 0.3 g/kg/day of trihoney (HCD+H1), 1% cholesterol diet with 0.6 g/kg/day of trihoney (HCD+H2) and 1% cholesterol diet with 2 mg/kg/day of atorvastatin (HCD+At). Animals were sacrificed after 12 weeks of treatment. Atherosclerotic plaques were quantified, measured and examined using Sudan IV, Hematoxylin and Eosin (H&E), Verhoeff-van Gieson (VGS) and Masson's trichrome staining techniques. Trihoney resulted in a significant ($p < 0.05$) reduction in the number of atherosclerotic lesions, tunica intima thickness, and tunica intima/tunica media thickness ratio. Trihoney preserved the orientation of medial elastic tissues and exhibited a plaque stability effect in the form of subendothelial smooth muscle cells (SMCs) recruitment and reduction of collagen deposition in tunica media. Trihoney could be recommended as a protective natural product and a future adjuvant to statins for the management of atherosclerotic plaques.

Author Keywords
Atherosclerosis; atorvastatin; trihoney
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