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Trihoney Suppresses Soluble Adhesion Molecules (ICAM-1 and VCAM-1) in Hypercholesterolemic Atherosclerotic Rabbits: A Comparative Study with Atorvastatin

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Abstract

Atherosclerosis is a chronic inflammatory disease and high serum cholesterol proven as the main trigger of its pathogenesis. Development of atherosclerotic lesions is closely related to the level of serum cholesterol. Expression of adhesion molecules has been correlated with the extent of aortic lesions. Serum circulating forms of intercellular adhesion molecule-1 (ICAM-1) and vascular cell adhesion molecule-1 (VCAM-1) have been detected in high levels in vascular inflammatory diseases. Honey has been shown to diminish the expression of VCAM-1 in vascular endothelium. Thirty-six male New Zealand white (NZW) rabbits were grouped into: 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+H-1), 1% cholesterol diet with 0.6 g/kg/day of Trihoney (HCD+H-2) and 1% cholesterol diet with 2 mg/kg/day of atorvastatin (HCD+At). Animals were sacrificed after 12 weeks of treatment. Serum was analysed for lipids, ICAM-1 and VCAM-1. Atherosclerotic plaques in the aorta were quantified. Serum ICAM-1 and VCAM-1 were significantly elevated in the HCD group when compared to the control groups. Groups Supplemented with Trihoney showed a significant suppression of serum ICAM-1 and VCAM-1 in comparison to the HCD group. Serum ICAM-1 and VCAM-1 exhibited a significant positive correlation with serum cholesterol. Serum VCAM-1 showed a significant positive correlation with the percentage of aortic lesions. Results of this study showed that Trihoney has anti-atherosclerotic potential through suppression of adhesion molecules. Trihoney was comparable to atorvastatin and may be suggested as an adjuvant remedy for protection against atherosclerosis.

Keywords

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