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The development of atherosclerotic plaques is a multistep process involving changes in blood lipid composition, dysfunction of the endothelium, and infiltration of inflammatory cells. Cellular and molecular studies revealed enhanced expressions of several genes in development of atherosclerosis. This thesis aimed to investigate whether changed expressions of endothelial surface genes (VCAM, ICAM, and selectins), MCP-1, MMPs, and tissue inhibitor of MMPs (TIMPs) are associated with the underlying changes of the endothelium and subendothelial space in the development of atherosclerosis. In addition, the present study also determined whether any novel differentially expressed gene (DEG) is associated with atherogenesis. Rabbits were fed with 1 % cholesterol to induce atherosclerosis. Blood serum was collected for lipid profile analysis. Aorta tissues were used to study changes in morphology, ultrastructure, and gene expressions. Luminal endothelial surface from rabbit aortic tissue was examined by scanning electron microscopy (SEM) using low vacuum mode. The tissue cross-sections were stained with hematoxylin and eosin (H&E) for microscopic observations of intimal thickening. Total RNA was extracted from aorta tissues for gene expressions analysis. Differentially expressed genes (DEG) were analyzed by Real-time polymerase chain reaction (PCR) and Quantigene® Plex. The development of atherosclerotic plaques is a multistep process involving changes in blood lipid composition, dysfunction of the endothelium, and infiltration of inflammatory cells. Cellular and molecular studies revealed enhanced expressions of several genes in development of atherosclerosis. 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Differentially expressed genes (DEG) were analyzed by Real-time polymerase chain reaction (PCR) and Quantigene® Plex. Diabetes Mellitus is notorious for its metabolic effect, acute and long term complications and impact on Quality of Life (QOL). Plethora of literature has documented the negative impact of DM on QOL. Currently, religion and spirituality constitute a topic of great importance to most of the world’s population where researchers have notably focused attention on the relationship between religion, spirituality and Quality of Life (QOL). However there is little, if none is known about the relationship of spirituality and diabetes-related QOL. The primary aim of this study was to determine factors affecting QOL among sample of patients with type 2 diabetes mellitus attending the medical centre of National University of Malaysia, Kuala Lumpur, Malaysia specifically in relation to spirituality. For this purpose we had to translate the English version of Spiritual Wellbeing Scale (SWBS) into Malay language as well as validate the Malay version of SWBS among Malaysian general population at Klang Valley and thence we proceeded to measure diabetes-related QOL among diabetic patients at the National University of Malaysia Teaching Hospital. Two questionnaires were used in this study; the Malay version of Spiritual Wellbeing Scale and the Audit of Diabetes Dependent Quality of Life (ADDQOL-18). The Malay SWBS is made of 20 items rated on 6 point Likert scale. The ADDQOL-18 raised leptin levels have been reported in placentae and serum of women with elevated blood pressure and proteinuria during pregnancy. The role of leptin in this however remains unclear. ACE2 is a new member in RAAS, which is reported to have hypotensive and anti-inflammatory effect and its suppression leads to increased blood pressure and endothelial activation. Therefore, this study investigated the effect of leptin and xanthenone (ACE2 activator) administration on systolic blood pressure (SBP), proteinuria and serum markers of endothelial activation during pregnancy in Sprague-Dawley rats. Eighty female Sprague-Dawley rats, aged 12-13 weeks were randomised into 10 groups, Group 1 acted as a control non-pregnant group and given saline (NSNP). Group 2, control pregnant rats, was given saline (NSP), group 3 was given 60 μg / kg /day of leptin starting from the 1st day of pregnancy (LD1-60), group 4, was given 60 μg / kg /day of leptin starting from the 10th day of pregnancy (LD10), group 5, given leptin from day 16 of pregnancy (LD16). Group 6 (L14D-60), given...
tissues was detected using immunochemistry (IHC). MMP genes in the intimal thickening of atherosclerotic tissues were validated by Real-time PCR. Presence of highly expressed DEG was cloned, sequenced, and used to analyze differentially expressed unknown genes. We also identified Cathepsin B as proatherogenic. We also identified Cathepsin B as proatherogenic.

control primer (ACP)-based GeneFishing™ PCR was used to analyze differentially expressed unknown genes. The DNA fragment from DEG was cloned, sequenced, and validated by Real-time PCR. Presence of highly expressed MMP genes in the intimal thickening of atherosclerotic tissues was detected using immunohistochemistry (IHC) staining. Lipid profiles obtained from rabbits fed with 1% cholesterol showed highly significant difference (p < 0.001) in total cholesterol and low density lipoprotein (LDL) while terminating the study at week-2 and week-8. Ultrastructural observations of the aortic luminal surface by low vacuum mode SEM showed changes from normal regular smooth intact endothelium to irregular luminal surface including endothelial swelling and formation of 'craters' on the endothelial surface. In the present study, we examined the aorta tissues much closer to its natural conditions using a preparation not subjected to critical drying point and heavy metal coating. Ultrastructural changes of the luminal surface in atherogenesis indicate dysfunction of the endothelium. Higher expression of cathepsin B gene; it was highly expressed at week-8 and week-12 of atherogenesis. Based on the findings of the present study, we can conclude that loss of endothelium integrity is associated with higher expressions of several types of endothelial surface genes. Additionally, we also found that intimal thickening was associated with differential expression profiles of MMPs and TIMPs genes. We also identified Cathepsin B as proatherogenic.

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