MMP-7 IN THE DEVELOPMENT OF ENDOTHELIAL DYSFUNCTION AND ATHEROSCLEROSIS

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Matrix metalloproteinase (MMP)-7, also called matrilysin, belongs to MMPs family of proteolytic enzymes that cleaves matrix components such as fibronectin, gelatins, collagen, laminin, entactinnidogen, and elastin. Alterations in the regulation of MMP-7 activity are implicated in diseases such as cancer, fibrosis, arthritis and atherosclerosis. Functional polymorphisms in MMP7 gene have been related to coronary artery disease, such as arterial stiffness and atherosclerotic plaque formation. However, the pathophysiological role of MMP-7 in the development of cardiovascular disease has not been fully characterized. Previous microarray experiments reveal that the gene expression of MMP7 is highly upregulated in regenerated endothelial cells of the porcine coronary artery after balloon injury. Cholesterol diet feeding partially prevents the upregulation of MMP7 in regenerated endothelial cells. In the present study, the endothelial function and the development of atherosclerosis in ApoE knockout (ApoE-/-) mice was monitored and compared with those of MMP7 deficient ApoE-/- mice. The results demonstrate a double-edged role of MMP7 in the development of endothelial dysfunction and atherosclerosis.