Aspirin inhibits monocyte chemoattractant protein-1 and interleukin-8 expression in TNF-a stimulated human umbilical vein endothelial cells

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摘要

Abstract

Atherosclerosis and its complications such as stroke, myocardial infraction and peripheral vascular disease, remain the major causes of morbidity and mortality in the world. Studies have showed that chemokines and adhesion molecules are involved in causing atherosclerosis by promoting directed migration of inflammatory cells. Monocyte chemoattractant protein-1 (MCP-1) is one of the key factors critical for the initiating and developing of atherosclerotic lesions. IL-8, a CXC chemokine, stimulates neutrophil chemotaxis. Aspirin is the most common drug used to prevent the complications of atherosclerosis such as stroke and coronary heart disease. In this study, we found that aspirin inhibited TNF-alpha (10 ng/ml)-induced MCP-1 and IL-8 expression at the RNA and protein levels in human umbilical vein endothelial cells (HUVECs), monocyte adhesion and transmigration, and that its inhibitory effects were not due to decreased HUVEC viability as assessed by MTT test. Aspirin at the dose as low as 10 microg/ml significantly inhibited the release of TNF-stimulated MCP-1 by 29.1% (P = 0.008) and IL-8 by 26.9% (P = 0.0146) as compared to TNF-stimulated release. Antibodies pretreatment were likely to decrease the production of MCP-1 (P < 0.0001) and IL-8 (P < 0.0001). Furthermore, aspirin (10 microg/ml) inhibited U937 cell adhesion by a 13.4% (P = 0.0119) inhibition as compared to TNF-stimulated alone. Finally, at higher concentration, aspirin also inhibited U937 migration to HUVEC by 89.1% (P = 0.0475) as compared to TNF-stimulated alone. These

results in our study suggest that aspirin inhibits TNF-alpha stimulated MCP-1 and IL-8 release in HUVECs, for its additional therapeutic effects of aspirin in causing atherosclerosis.