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Testosterone Inhibits Migration of Porcine Coronary Smooth Muscle Cells via PKC

Migration of smooth muscle cells from the media into the intima has been shown to play a significant role in atherosclerosis. Recent clinical trials of atherosclerosis indicate that testosterone (TST) protects against coronary heart disease, however, the role of TST in coronary smooth muscle (CSM) migration has not been determined. We tested the hypothesis that TST inhibits migration of CSM. Cultured subconfluent (dedifferentiated) and 6 day serum starved postconfluent (differentiated) porcine CSM from passages 2 to 6 were plated in 8 μ m pore, 96 well, chemotaxis plates (Millipore). Migration was stimulated by the addition of growth factor PDGF-BB (30ng/ml) for 4 hours in the presence and absence of 1nM, 20nM and 100nM TST. In both dedifferentiated and differentiated cells, TST inhibited migration at all concentrations in a dose-dependent manner (60, 85 and 90 % inhibition respectively). Chelerythrine (1 μ M), a PKC-specific inhibitor, completely blocked migration by TST. In differentiated cells, 18 hour pretreatment with TST showed similar inhibition. Our data demonstrate that TST inhibits CSM migration through a PKC-dependent mechanism. Supported by HL071574 and NASA.