

Inhibitory Effect of a Flavone Compound Luteolin on the Vascular Smooth Muscle Cell Proliferation

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We examined the inhibitory effect of luteolin on the platelet derived growth factor (PDGF)-BB-induced VSMCs proliferation. To certify the inhibitory mechanism of luteolin, it is investigated that phosphorylation of PDGF receptor and its downstream intracellular signal pathways such as extracellular signal-regulated kinase 1/2 (ERK1/2), phospholipase C-1 (PLC-1) and Akt, and confirmed the *c-fos* mRNA expression. Luteolin concentration-dependently inhibited the PDGF-BB-induced proliferation and DNA synthesis of rat aortic VSMCs. Luteolin did not show any cellular toxicity or apoptosis as determined by flow cytometric analysis at the concentration used in this study. In addition, luteolin significantly inhibited the PDGF receptor phosphorylation in a concentration-dependent manner. Downstreams of PDGF receptor such as ERK1/2, PLC-1, Akt and *c-fos* mRNA were also inhibited by luteolin. In accordance with these findings, luteolin revealed blocking of the PDGF-induced progression through G₀/G₁ to S phase of the cell cycle. These results suggest that luteolin inhibits PDGF-BB-induced VSMCs proliferation, and its activity may be mediated, at least in part, by downregulation of PDGF receptor phosphorylation and its downstream intracellular signal pathways in rat aortic VSMCs.

Key words: Luteolin; vascular smooth muscle cell; proliferation