Endothelium-dependent vasodilatory effect of Smilax china Linn. water extract via PI3K/Akt signaling

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The objective of this study was to investigate the pharmacological effect of Smilax china Linn. water extract (SCLWE) on vascular relaxation and its underlying biochemical mechanisms. Isolated rat aortic rings were pre-constricted with phenylephrine (PE). This was followed by the cumulative addition of SCLWE. The effect of endothelial nitric oxide and PI3K/Akt on the SCLWE-induced vasodilation was investigated by the pretreatment of endothelium-intact aortic strips with or without NG-nitro-L-arginine methyl ester (L-NAME) or wortmanin before constriction with PE. Treatment of PE (1 μM)-pre-contracted aortic strips with SCLWE induced endothelium-dependent relaxation, which was attenuated by L-NAME and wortmanin. Further studies using HUVECs indicated that nitrite production, eNOS and PI3K/PKB (Akt) phosphorylations were increased after exposure to SCLWE but was attenuated by pretreatment with wortmanin. These results suggest that SCLWE induces vasodilation by augmenting NO production in endothelial cells via PI3K/Akt-dependent eNOS phosphorylation.