Inhibition of platelet activation and endothelial cell injury by polyphenolic compounds isolated from Lonicera japonica Thunb

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Abstract

Effects of the polyphenolic compounds isolated from Lonicera japonica Thunb on platelet aggregation, platelet thromboxane biosynthesis and hydrogen peroxide-induced endothelial cell injury were studied. With regard to the inhibitory effect on human platelet aggregation, methyl caffeate, 3,4-di-O-caffeoylquinic acid and methyl 3,4-di-O-caffeoylquinate had a strong effect. They significantly inhibited the second wave of platelet aggregation induced by ADP. Concerning thromboxane biosynthesis triggered by calcium ionophore A23187 in platelets, methyl caffeate and methyl 3,4-di-O-caffeoylquinate had the most potent inhibitory effect. Methyl 3,4-di-O-caffeoylquinate directly inhibited the conversion of arachidonic acid to thromboxane by platelet microsomes, while methyl caffeate did not have any significant effect on thromboxane biosynthesis in platelet microsomes. In the prevention of hydrogen peroxide-induced endothelial cell injury in culture, protocatechuic acid, methyl caffeate, methyl chlorogenic acid and luteolin were significantly effective. The inhibitory effect on platelet activation and the cytoprotective effect on hydrogen peroxide-induced cell injury may explain the possible role of polyphenolic compounds isolated from Lonicera japonica Thunb in maintaining vascular homeostasis.