Inhibitory activity of kinetin on free radical formation of activated platelets in vitro and on thrombous in vivo

林建煌

Hsiao G;Shen MY;Lin KH;Chou CY;Tzu;NH;Lin CH;Chou DS;Chen TF and Sheu JR

Abstract

Kinetin has been shown to have anti-aging effects on several different systems, including plants and human cells. Recently, we demonstrated that kinetin markedly inhibited platelet aggregation in washed human platelets. In the present study, an electron spin resonance (ESR) method was used to further evaluate the scavenging activity of kinetin on the free radicals formed. Kinetin (70 and 150 microM) concentration dependently reduced the ESR signal intensity of hydroxyl radicals in collagen (1 microg/ml)-activated platelets. Furthermore, kinetin was effective in reducing the mortality of ADP-induced acute pulmonary thromboembolism in mice when administered intravenously at doses of 4 and 6 mg/kg. In addition, intravenous injection of kinetin(4 and 6 mg/kg) significantly prolonged the bleeding time by approximately 1.9- and 2.1-fold as compared with normal saline in severed mesenteric arteries of rats. A continuous infusion of kinetin (0.6 mg/kg/min) for 10 min also significantly increased the bleeding time by about 2.3-fold, and the bleeding time returned to baseline within 120 min after cessation of kinetin infusion. Platelet thrombi formation was induced by irradiation of mesenteric venules with filtered light in mice pretreatedintravenously with fluorescein sodium. When kinetin was administered at 13 and 14 mg/kg in mice pretreated with fluorescein sodium (5 mg/kg), the occlusion time was significantly prolonged. In conclusion, these results suggest that kinetin has effective free radical-scavenging activity in vitro and antithrombotic activity in vivo. Treatment with kinetin may lower the risk of thromboembolic-related disorders. Therefore, kinetin may be a potential therapeutic agent for arterial thrombosis, but its toxicity must be further assessed.