Mechanism underlying the induction of vasorelaxation in rat thoracic aorta by sanguinarine

鄭慧文
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Abstract

In the present study, the effect of sanguinarine (SANG) on smooth muscle was investigated in thoracic aorta isolated from rats. SANG dose-dependently relaxed the phenylephrine (PE, 3 microM)-precontracted aorta; and the concentrations to produce 50% relaxation were 3.18 +/- 0.37 and 3.42 +/- 1.14 microM, respectively, in intact and denuded aorta. These results suggest that the relaxing effect of SANG was endothelium-independent. The total contraction induced by PE was inhibited in aorta pretreated with SANG at microM concentration. Both phasic and tonic contractions induced by PE were inhibited by SANG independently, which were further supported by the fact that inositol 1,4,5-trisphosphate (IP3) formation and 45Ca2+ influx induced by 3 microM PE in denuded aorta were inhibited by SANG concentration-dependently. In addition, the vasocontraction induced by high-K+ was also inhibited by SANG, however, at higher concentrations. The inhibitory effects of SANG were reversed by dithiothreitol, a thiol reducing agent, implying that the oxidation of critical sulfhydryl groups on key molecules that regulate the smooth muscle contraction were involved. These data suggested that the inhibitory effects of SANG on PE-induced vasocontraction might involve the inhibition of IP3 formation and blockade of calcium channel.