

Inhibition of platelet aggregation and arachidonate metabolism in platelets by procyanidins

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Abstract

The effects of procyanidins on platelet aggregation and arachidonate metabolism in platelets were studied. Nine procyanidins were used in this investigation. Procyanidins B-2-S, EEC and C-1 significantly induced the inhibition of platelet aggregation, and the potency of inhibition was comparable with aspirin. Procyanidin B-2-S was used as a representative of procyanidins for further studies on the effect on arachidonate metabolism. In arachidonate metabolism by fatty acid cyclooxygenase pathway, B-2-S inhibited TXB₂ and HHT formation by intact platelets treated with exogenous arachidonic acid. It also inhibited TXB₂ formation measured by a specific radioimmunoassay when the cells were challenged with calcium ionophore A23187. In cell-free system, B-2-S inhibited both TXB₂ and 12-HETE bioynthesis in platelet microsome and cytosol, respectively. The inhibitory effect on thromboxane biosynthesis might explain the inhibitory effect of procyanidins on platelet aggregation.