ABSTRACT

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The most common antioxidants in ordinary food are flavonoids. They show antioxidant and anti-aggregation effects and other positive effects on cardiovascular diseases. Flavonoids are promising candidates to be antiplatelet drugs. Although several mechanisms responsible for antiplatelet activity have been suggesteed, only a few have been documented by published studies. The inhibition of blood platelet aggregation by flavonoids is reversible, which is another important factor. Data on thrombin-induced aggregation are controversial, some claim that flavonoids have no effect, the others says they have positive effects. (In the case of quercetin and genistein, inhibition of aggregation induced by thrombin was documented). The effect on arachidonic acid in the aggregation cascade is well documented, but there are several inconsistencies resulting from the use of different materials. Other mediators of aggregation are phospholipase A_2, which plays a key role in the formation of inflammatory mediators. In this case, it has been shown that mainly genistein is capable of inhibiting both phospholipase A_2 and aggregation induced by arachidonic acid. According to available studies, the effect of flavonoids on COX is reversible, whereas the effect on thromboxane synthase is practically absent. An antagonistic effect on the thromboxane receptor appears to be very important. The above-mentioned mechanisms suggest that flavonoids could also inhibit collagen-induced aggregation, and indeed some studies have confirmed that. Some flavonoids may reduce platelet aggregation induced by ADP at low concentrations.

Finally, it can be said, even though there are a number of studies describing the anti-aggregation effects of flavonoids, there is not yet unambiguous evidence from human studies about their benefits.

Key words: flavonoids, blood platelet, antiaggregation, collagen, ADP, COX, phospholipase A_2, antioxidant effect