Antithrombotic Effects of Flavonoid

To the Editor:

We read with interest the article by Mruk and colleagues demonstrating the antithrombotic and antispastic effects of flavone-8-acetic acid (flavonoid) in an animal model of a deep arterial injury. The authors conclude that “Flavonoid markedly reduced platelet deposition, mural thrombi, and injury-induced vasoconstriction after deep arterial injury, suggesting that a major inhibition of platelet glycoprotein Ibα may be beneficial therapy.”

In our opinion, a major issue must be addressed regarding their conclusion. They speculated that flavonoid inhibited platelet thrombus formation by inhibiting von Willebrand factor (vWF) interaction with glycoprotein (GP) Ibα only on the basis of a citation of data from a previous publication indicating that flavonoid has an inhibitory effect on ristocetin-induced platelet aggregation. Although it is true that recent investigations have shown a crucial role of vWF interaction with GP Ibα in platelet thrombus formation at sites exposed to high shear stress, the unique characteristics of the vWF-GP Ibα interaction that occurs under high shear stress cannot be mimicked by the interaction induced by exogenous modulators such as ristocetin or botrocetin. The most important characteristic of vWF for platelet thrombus formation is platelet tethering by strong and transient interaction with GP Ibα, which can be induced by the exogenous modulators ristocetin and botrocetin and is mediated exclusively by its binding to GP Ibα, never occurs under flow conditions in the absence of these modulators. The stable attachment of vWF on the platelet surface can only be observed when vWF is concurrently bound with both GP Ibα and GP IIb/IIIa.

Thus, the fact that flavonoid inhibits ristocetin-induced platelet aggregation does not provide any direct evidence that it inhibits arterial thrombus formation through an inhibition of vWF-GP Ibα interaction. Therefore, although the conclusion that “Flavonoid markedly reduced platelet deposition and mural thrombi after deep arterial injury” may still be acceptable, we do not think the role of GP Ibα blockage of either thrombus formation or vascular constriction was demonstrated by the studies of Mruk et al.

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