

Antiplatelet Activity of Nitrated Fatty Acids from Tomato Pomace

Authors : Lyanne Rodriguez, Eduardo Fuente, Andrés Trostchansky, Ivan Palomo

Abstract : Cardiovascular diseases (CVD) are the leading cause of death in the world. The development of platelet-rich thrombi has been considered a trigger for acute cardiovascular events. A healthy diet, rich in fruit and vegetables, has been related to increased protection against cardiovascular events. Previous studies have observed that tomato pomace has a potent antiplatelet activity, due could be attributed to its high content of fatty acids (> 30%). It has been shown that unsaturated fatty acids can undergo endogenous intracellular nitration reactions during digestion after lipid consumption. Additionally, nitrated fatty acids (NO₂-FA) can significantly reduce atherosclerotic lesion formation, inhibiting the expression of adhesion molecules on dysfunctional endothelium and platelet activation. In this work, we have proposed the nitration of fatty acids present in tomato pomace to improve its antiplatelet action. The gastric digestion of the tomato pomace allowed the nitration of the fatty acids, while by HPLC/MS/MS we were able to identify and quantify the nitrated fatty acids. The nitrated tomato extracts showed antiplatelet potential when platelets were stimulated with TRAP-6 and collagen. This activity was related to the presence of nitrated linoleic acid, which inhibited platelet activation by flow cytometry. The knowledge about the antiplatelet activity of nitrated fatty acids from tomato pomace will further develop new and more effective agents.

Keywords : cardiovascular, tomato extracts, nitrated fatty acids, antiplatelet activity

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