

Antiplatelet Activity of Nitrated Fatty Acids from Different Food Sources

Authors : Lyanne rodriguez, Eduardo Fuentes, AndrésTrostchansky, Felipe Lagos

Abstract : Nutrition is a crucial strategy to combat cardiovascular diseases (CVD), which remain a leading global cause of mortality. Various studies have demonstrated the antiplatelet properties of commonly consumed fruit and vegetable extracts, particularly tomato and bean extracts. Previous research has indicated potent antiplatelet activity in tomato and common bean pomace, attributed to their high fatty acid content (>30%). Notably, fatty acids can undergo nitration during digestion, catalyzed by the reaction of nitrogen dioxide with unsaturated fatty acids. Understanding the mechanisms underlying the formation of nitrated fatty acids from dietary sources is essential to comprehending their antiplatelet action. This research aims to evaluate the formation of nitrated fatty acids (NO₂-FA) from different foods (tomato pulp and common beans). Specifically, tomato pomace and nitrated bean extracts exhibited concentration-dependent antiplatelet effects when platelets were stimulated with TRAP-6 and collagen (1.18±0.04 and 0.7±0.02 mg/mL, respectively). Furthermore, the antiplatelet potential was associated with the modulation of platelet activation markers, as both nitrated extracts suppressed p-selectin expression, CD63 secretion, and fibrinogen modulation. Additionally, a synergistic effect was observed between both nitrated extracts. Our results suggest that NO₂-FA obtained from different food sources has a promising antiplatelet effect for preventing and treating blood clots. This study adds value to these foods in terms of reducing cardiovascular events.

Keywords : foods, nitrated fatty acids, nitration, platelets

Conference Title : ICC 2025 : International Conference on Chemistry

Conference Location : Houston, United States

Conference Dates : February 11-12, 2025