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Effective anti-platelet and anti-inflammatory activity of natural phenolics

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Polyphenols are natural compounds found in most vegetables and fruits. They represent a wide family of high-added value molecules, mainly known for their significant antioxidant properties. The search for natural specific phenolics with bioactivities, such as anti-platelet and anti-inflammatory has gained increasing importance in recent times, due to the growing worldwide concern about cardiovascular diseases, intravascular thrombosis and carcinogenicity of synthetic compounds. Platelets play a very important role in cardiovascular diseases. Therefore, in this study we examined the ability of several phenolics, such as ellagic acid, ferulic acid, gallic acid, quercetin and kaempferol to inhibit human platelet aggregation induced by collagen and adenosine diphosphate (ADP). Specifically, the anti-platelet activity of all phenolics tested at a concentration of 300 μM, found to be from 83-96% against collagen and from 75-91% against ADP. Furthermore, inhibition of cyclooxygenases enzymes (COX-1 and COX-2) activity by inhibitors reduces the production of TXA2 and subsequently inhibits platelet aggregation. Thus, the anti inflammatory activity of the above mentioned phenolics against COX-1 and COX-2 was evaluated. Ferulic acid, gallic acid, quercetin and kaempferol found to have significant effect against COX-1, whereas only ferulic acid, gallic acid and kaempferol inhibited COX-2. These interesting results may lead to a final conclusion for natural phenolics potential use as medication for thrombosis and cardiovascular diseases.

Biography

Maria Liakopoulou-Kyriakides has completed her PhD in Chemistry, Postdoctoral studies at Yale University, USA in the section of Cell Biology. She has joined the Department of Chemical Engineering at Aristotle University in Thessaloniki, Greece, since 1981 and has contributed to its development as Professor of Bioorganic Chemistry, teaching several undergraduate courses and recently as Director of the graduate program in Chemical Engineering. Her administrative work as Chair (4 years), Vice Chair (4 years) and Director of section of Chemistry (10 years) of the Department of Chemical Engineering is also noticeable. Her research interests include synthesis of oligopeptides, chemical characterization and biological activity, isolation of bioactive compounds from plants and biological evaluation, microencapsulation of biological active compounds, microbial biotechnology (food and environmental) and bioremediation. She has coordinated many research projects and published over 100 peer-reviewed papers. She has organized and participated in several international and national conferences.

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