COMPARATIVE EVALUATION OF GARCINIA MANGOSTANA EXTRACTS ON PLATELET ACTIVATION

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Abstract - Platelet activation is a critical mediator of thrombotic events and contributes significantly to morbidity in patients with cardiovascular disease as well as those undergoing hematopoietic stem cell transplantation and cellular therapies. Thrombosis represents a frequent and severe complication in transplant recipients, often driven by heightened platelet reactivity, endothelial injury, and inflammation. Identifying novel agents that selectively modulate platelet activation may therefore provide clinical benefit in reducing post-transplant thrombotic risk. In this study, we evaluated the effects of Garcinia mangostana extracts on platelet activation using multiple agonists. Three major active components, designated as α-mangosteen, β-mangosteen, and γ-mangosteen, were identified. Using collagen as the primary screening agonist, the γ-mangosteen demonstrated potent inhibition of collagen-induced platelet activation at relatively low concentrations, whereas the α-mangosteen and β-mangosteen required higher concentrations to exert detectable effects. Further testing with stronger agonists, including thrombin, arachidonic acid (AA), and U46619, revealed that none of the components significantly affected platelet activation at higher concentrations, indicating a high degree of specificity of the γ-mangosteen toward collagen-mediated pathways. These findings highlight the potential of the γ-mangosteen of Garcinia mangostana as a natural, selective inhibitor of platelet activation, with particular relevance to transplant and cellular therapy settings where thrombotic complications remain a major clinical challenge. Future studies will focus on delineating the molecular mechanisms underlying this activity and evaluating its therapeutic utility in preventing platelet-driven thrombotic events in high-risk patient populations.

Keywords - Platelet Activation; Garcinia Mangostana; γ-Mangosteen; Thrombotic Events.