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Impact of 1, 8 Cineole on platelet function, thrombus formation and haemostasis

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Thrombosis is one of the major cardiovascular diseases that occur when the platelets become activated inappropriately within the circulation under pathological conditions. Currently, anti-platelet drugs such as aspirin and clopidogrel are used to treat these conditions. However, these drugs are associated with serious side effects, especially bleeding. Therefore, development of improved therapeutics to treat thrombotic diseases is an important strategy to combat cardiovascular diseases. In this study, we investigate the effects of 1,8 cineole in the modulation of platelet function, thrombosis and haemostasis.

Methods: To determine the modulatory effects of 1,8 cineole in platelet activation, aggregation assays were performed using platelet-rich plasma by optical aggregometry in the presence or absence of different concentrations (6.2, 12.5, 25, 50 and 100 μM) of 1,8 cineole. Platelets were pre-treated with 1,8 cineole for 5 minutes prior to stimulation with various agonists such as CRP-XL, collagen, thrombin and ADP. Furthermore, the level of fibrinogen binding (as a marker for integrin αIIbβ3) and P-selectin exposure (as a marker for α-granule secretion) on the platelet surface were measured by flow cytometry using human platelets.

Results: Our findings demonstrate the inhibitory activities of 1,8 cineole on human platelets. Indeed, 1,8 cineole affected platelet aggregation in a dose-dependent manner when activated by various agonists. Similarly, the level of fibrinogen binding and P-selectin exposure upon stimulation with CRP-XL was significantly inhibited by 1,8 cineole. These results suggest that 1, 8 cineole may have modulatory effects on platelet function and thereby thrombosis, and therefore this might be useful in controlling thrombotic diseases.

Biography

Kahdr Alatawi has completed his MSc at the University of Glasgow in Clinical Pharmacology. Currently, he is pursuing PhD degree at the University of Reading. His research interests are focused on platelet signaling and inflammatory responses.

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