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Effect of phytocannabinoids in the modulation of thrombosis and haemostasis

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Platelets are small circulating blood cells that play primary roles in the maintenance of haemostasis through blood clotting. Inappropriate activation of platelets in pathological conditions leads to thrombosis under arterial circulation causing an obstruction of the blood flow to major organs such as heart and brain resulting in myocardial infarction and stroke, respectively. While the currently used anti-platelet drugs help saving lives, they are associated with unwanted side effects. Hence, the development of improved therapeutic strategies to treat/prevent thrombotic diseases is a pressing priority. Non-psychoactive phytocannabinoids such as cannabidiol (CBD) from Cannabis Sativa plant have been demonstrated to possess numerous beneficial effects in distinctive pathological conditions. Therefore, in this study, we investigated the effects of CBD and its precursor

molecule cannabigerol (CBG) in the modulation of platelet function, thrombosis and haemostasis. Both CBD and CBG (at concentrations of 1-100 μ M) inhibited significantly agonists used in this study (CRP-XL, thrombin, ADP, U46629 and collagen) in platelet function such as aggregation, fibrinogen binding, P-selectin exposures and ATP secretion. Moreover, CBD and CBG did not exert any cytotoxic activities at the concentrations used in this study. The data obtained in this study demonstrate that CBD and CBG have the potential to modulate platelet function through inhibiting multiple agonists-induced pathways at concentrations of less than 10 μ M. Together; our results suggest that CBD and CBG may act as potential therapeutic agents to treat/prevent thrombotic diseases.

Biography

Eman Mousa S. Alzahrani has completed her bachelor degree in Biochemistry at 2010 from King Abdul-Aziz University in Jeddah, Saudi Arabia. Then worked in National Guard hospital in Jeddah, Saudi Arabia in Biochemistry laboratory. In 2012, she was awarded a master degree in Business administration. She is now a second year PhD student in Pharmacy, University of Reading, United Kingdom. She has presented her research data in the 8th European Workshop on Cannabinoid Research at London in 2017.

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