**TETRAMETHYLPYRAZINE INHIBITS CALCIUM RESPONSE IN PLATELETS BY SUPPRESSING SGK1**

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Tetramethylpyrazine (TMPZ) is exclusively used for heart disease. TMPZ is reported to suppress the elevation of intra-platelet calcium ions (Ca2+), however, the mechanism(s) underlying these actions is poorly understood. In the present study, the effect of TMPZ on platelet aggregation induced by adenosine diphosphate (ADP) was assessed using a turbidimetric approach. The intracellular Ca2+ concentration following ADP stimulation was determined using a fluo-4 Ca2+ probe. The mRNA levels of Ca2+-pathway molecules—stromal interaction molecule l (STIM1) and Orai1—and the protein levels of STIM1, Orai1 and serum/glucocorticoid-regulated protein kinase 1 (SGK1) were determined by real-time PCR and Western blotting, respectively. The results demonstrated that TMPZ effectively reduces platelet aggregation in a dose-dependent manner. TMPZ inhibits intracellular Ca2+ concentration triggered by ADP administration. Application with 2-mM TMPZ suppresses ADP-induced STIM1 and Orai1 expression in platelets at both mRNA and protein levels and reduces SGK1 expression. Taken together, TMPZ inhibits platelet activation, by suppressing the activities of SGK1 pathway.