**THE PROTECTIVE EFFECTS OF PARTHENOLIDE TREATMENT IN MOUSE CORTICAL MICROVASCULAR ENDOTHELIAL CELLS INVOLVED CA2+ CLEARANCE SUPPRESSION BY IMPAIRING PLASMALEMMAL CA2+ PUMP ACTIVITIES AND ER STRESS**

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*Aims*: Parthenolide has been reported to be a cardioprotectant, but not much is known of its actual mechanism. We investigated whether parthenolide affected Ca(2+) signaling in endothelial cells, key components in regulating the vascular tone.

*Methods*: Brain micro-vascular bEND.3 cells were from Sigma (USA). The western blots were visualized by enhanced chemiluminescence (MA, USA). Cytosolic Ca2+ in bEND was measured with Fura-2 method. Cell membrane potential (MMP) measured by MMP Assay Kit. Cell viability was measured By MTT assay. The p < 0.05 were considered significant (ANOVA).

*Results:* we found that a 15-h treatment with parthenolide resulted in amplified ATP-triggered Ca(2+) signal; the latter had a very slow decay rate suggesting suppression of Ca(2+) clearance. Evidence suggests parthenolide suppressed Ca(2+) clearance by inhibiting the plasmalemmal Ca(2+) pump; such suppression did not result from decreased expression of the plasmalemmal Ca(2+) pump protein. Rather, such suppression was possibly a consequence of endoplasmic reticulum (ER) stress, since salubrinal (an ER stress protector) was able to alleviate parthenolide-induced Ca(2+) clearance suppression. *Conclusion*: The protective effects of parthenolide treatment in bEND involved ca2+ clearance suppression by impairing plasmalemmal ca2+ pump activities and subsequently ER stress. it is important to further examine in details the perturbing effects of parthenolide on Ca(2+) homeostasis in endothelial cells

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