

## **Modulation of POPDC1 expression by Phenothiazine and Trifluoperazine suppress colon cancer growth and migration**

### **ABSTRACT**

Objective: The aim of this study was to investigate the effects of CaM antagonist, PTZ, and TFP on cell proliferation and migration of colon cancer cells and its impact on POPDC protein expression. Methods: The 50% inhibitory concentration ( $IC_{50}$ ) of PTZ and TFP in SW1116, SW480, HCT-15, and COLO205 colon cancer cell lines are measured using MTT. Western blot and immunocytochemistry were used to determine the expression of PCNA, cyclin D1 (CD1), and POPDC proteins. Cell migration was observed using a scratch wound-healing assay. Results: Treatment with PTZ and TFP inhibited colon cancer cells growth in a dose-dependent manner. PTZ and TFP significantly inhibited the activation of proliferation markers, PCNA and CD1, and the migration of colon cancer cells. Furthermore, POPDC protein was significantly suppressed in all cell types of colon cancer, particularly in SW480. Finally, the CaM antagonist upregulates the *POPDC1* expression in colon cancer cells. Conclusion: These findings suggest that CaM antagonists suppress colon cancer cells proliferation via downregulation of CD1 and PCNA. In addition, POPDC protein could be used as a biomarker in colon cancer, and CaM antagonist could be used to regulate *POPDC1* expression. This study suggests that targeting *POPDC1* with CaM inhibition could be a potential therapeutic strategy for colon cancer treatment.