

LINXS Event - Membrane Protein workshop: Structural Resolution of Membrane Proteins: From Expression to Sample Preparation

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Study of anti-cancer effects of TTA-A2 and paclitaxel due to antagonistic interactions with T-type calcium channels

Content

Studies have shown that in cancer cells, there is an increased T-type calcium channel (TTCC) expression compared to healthy cells. Therefore, the studies targeting TTCC for cancer therapy have shown many positive outcomes. Here, we have used TTA-A2- a potent TTCC inhibitor as a test drug, and paclitaxel (PTX)- a tubule-binding anti-cancer agent as a positive control. Blocking TTCC has shown to overcome resistance in cancer cells towards anti-cancer drugs by reducing calcium influx, and some studies have shown that PTX treatment also reduces the intracellular calcium signaling in cells. So, there is a possibility that PTX might be interacting with calcium channels. Since, drug-drug interaction can cause severe side-effects, or alter the actions of each other; we aim to study the interactions among TTA-A2, PTX, and TTCC. Therefore, in this study we have analyzed the binding of of TTA-A2 and PTX with TTCC. Our results showed that both the drugs, TTA-A2 and PTX, could interact at the same site of TTCC to form a higher stable complex as compared to the TTCC-native. The result indicated that sequential treatment could help to overcome the antagonistic interaction between the two drugs.

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