

Synergic effect of vitamin D supplementation and PARP inhibitors on TNBC cell line proliferation

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Triple-negative breast cancer (TNBC) has a high mortality rate with aggressive proliferation and metastasis and a lack of effective therapeutic options. Some poly (ADP-ribose) polymerase inhibitors (PARPi) such as Talazoparib, have been tested in patients with metastatic breast cancer. However, the side effect of using the effective therapeutic dose is a concern. Evidence exists about Vitamin D's regulatory effect on cell junction molecules' formation and degradation in some cancer cells, which affects cell viability. The present study's objective was to investigate the synergic effect of Vitamin D (Calcitriol) and Talazoparib on MDA-MB-468, a TNBC cell line. The cell line proliferation was assessed using the MTT test and determined by the dose-response curve. The range of concentration was 2x dilution of Talazoparib (between 200 μM to 0.01 μM) and 10x dilution of Calcitriol (ranged 10 μM to 0.001 μM). The cells were treated with the combination of Calcitriol and Talazoparib based on the IC₅₀, which was obtained in this study. The IC₅₀ of Calcitriol alone and Talazoparib alone was 0.3623 μM 0.3049 μM , respectively. The synergic effect of 0.001 μM Calcitriol and Talazoparib reduced the IC₅₀ of Talazoparib to 0.02102 μM . In conclusion, even the proliferation of MDA-MB-468 was inhibited by both Calcitriol and Talazoparib alone, the synergic effect of vitamin D with Talazoparib had an inhibitory effect on MDA-MB-468 proliferation in a lower dose of Talazoparib.