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An integrative approach with cannabinoid analogs

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Non-Hodgkin Lymphoma (NHL) is the most common hematological malignancy, with an aggressive form of mantle cell lymphoma (MCL). Previous studies demonstrated that lymphomas overexpress CB1 receptors; as well as cannabinoid analogs showing therapeutic promise. The aim of this study is to investigate how various cannabinoid compounds can integrate with traditional chemotherapeutics in MCL cell lines. Our method includes harvested cells from representative MCL cell lines being plated at 5,000 cells per well. The cells were incubated for 72 hours in 20μL medium with 10% FBS and varied concentrations of Ibrutinib (IBN), Venetoclax (ABT-199), Rimonabant (SR141716), or dimethylsulfoxide (DMSO) vehicle. Viability assays were conducted using Celltiter-Glo Luminescent Cell Viability Assay with experiments performed 2-3 times independently with each concentration tested in triplicate. Drug synergy viability studies were conducted to compare effectiveness among conventional treatment of IBN, ABT-199 and SR141716, a CB1 antagonist, in various combinations. Data suggest the most effective combination being IBN and ABT-199, showing the lowest concentration of 6.5μM for cells to be at 0% of control. However, results with CB1 antagonist proved to be effective in the combination of ABT-199 and SR141716; showing less than 12.5% of control at concentrations of 6.5μM. Other drug combinations and individual drugs were less effective showing a 0% of control at concentrations of 12.5μM and greater. Reduction in viability is shown to be greater among combinations of drugs as opposed to the induvial effect of a single drug, depicting synergistic efficacy.

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