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Targeting cannabinoid receptors for cancer treatment

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Non-Hodgkin Lymphoma (NHL), being the most common hematological malignancy, has long been studied where the most common is diffuse large B-cell lymphoma (DLBCL) and one of the more aggressive forms is mantle cell lymphoma (MCL). Previous studies demonstrated that lymphomas not only express CB2 receptors, which are known to be associated with immune cells, but over express CB1 receptors. Therefore, the aim of this study is to investigate how various cannabinoid compounds affect DLBCL and MCL cell lines. Methods included cells from representative DLBCL and MCL cell lines being plated at 5000 cells per well. The cells were incubated for 72 hours in 20 μL medium with 10% FBS and treated at varied concentrations of SR141716-CB1 antagonist (Rimonabant), CP945598-CB1 antagonist (Otenabant), AM251-CB1 inverse agonist, AM1241-CB2 agonist, or dimethylsulfoxide (DMSO) vehicle. Viability assays were then conducted using Celltiter-Glo Luminescent Cell Viability Assay. Experiments were performed 2-3 times independently with each concentration tested in triplicate. The studies included dose dependent viability studies conducted with following cannabinoids: SR141716, a CB1 antagonist (Rimonabant), CP945598, a CB-1 antagonist (Otenabant), AM251, a CB-1 inverse agonist, and AM1241 a CB-2 agonist. All drugs showed a reduction in viability, with most drugs exerting an effect at a concentration of 10 μM or more with 0% of control at concentrations of 100 μM.

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