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The Effects of Cannabidiol and delta 9-Tetrahydrocannabinol Concentration on Breast Cancer Cells

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Natural Science Poster

Title: The Effects of Cannabidiol and delta 9-Tetrahydrocannabinol Concentration on Breast Cancer Cells

Presenter: Agyemang, Dorothy

Faculty Sponsor: Hyslop, Richard

Abstract:

Delta 9-tetrahydrocannabinol (THC) and cannabidiol (CBD) are phytocannabinoids that have a potential impact on cancer treatments. Studies have shown that certain cannabinoids cause cancer cells to die, but only with the right concentration, which has not been well documented. The purpose of this study is to determine the exact concentration of CBD and THC needed to kill MCF-7 breast cancer cells. In this experiment, the initial treatment group will be treated with CBD or THC at concentrations of 0.1, 1, 10 and 100 micromolar. These concentrations were arbitrarily chosen because there is not an established baseline. Cell metabolic activity will be assessed by adding tetrazolium dye (MTT assay), which is a colorimetric assay. After the MTT assay, a plate reader will be used to estimate the percent of the MCF-7 apoptosis. Because MTT assay does not directly indicate cell death, western blot will be performed. MCF-7 cells will be analyzed for apoptosis through western blot by detecting poly polymerase (PARP) cleavage. The results are expected to show that 1 and 10 micromolar of the THC and CBD will cause cell apoptosis. Cannabinol has therapeutic potential because of anti-proliferative effects and reduction in traditional side effects associated with current treatments; therefore cannabinoid drugs are significant anti-cancer treatments for research and development.