Anticancer Effects of Plant-Derived Compounds on the NF-kB Signaling Cascade

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Various natural plant products have been thought to contain compounds that could possibly counteract the deadly effects of many diseases, like cancer. Using this knowledge, I hypothesized that certain plant-based compounds could kill cancer cells. I designed my experiment to first extract the compounds and then to test out whether or not these compounds do indeed have anticancer activity. I first dissolved four natural plant products (Ginger, Garlic, Basil, and Turmeric) into three solvents (Water, Dichloromethane, and Methanol) to elicit the extracts that would potentially contain anticancer compounds. I then treated cancer cells with those extracts and ran two separate assays (Cell Viability and Luciferase) both of which can be used to monitor the NF-kB signaling pathway. In the Cell Viability assay, I found that both Turmeric and Ginger dissolved in Dichloromethane were able to inhibit cancer cell growth by 85% and 86% respectively, suggesting that these extracts have compounds in them with anticancer properties. In the Luciferase assay, I found that Ginger dissolved in Dichloromethane inhibited Luciferase expression by 73%, suggesting that the compounds in this product were able to block the NF-kB signaling pathway. All in all, based on my results, I can accept my hypothesis that some natural plant products have compounds in them that have anticancer properties and that they target cancer pathways such as the NF-kB pathway and inhibit cell growth.

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