Curcumin vs. Cancer: The Effects of Curcumin on MCF-7 Breast Cancer Cells

Mamaty, Katrina

This project explores the effectiveness of Curcumin, a polyphenol from the spice Turmeric, on breast cancer cells and its ability to inhibit the proliferation of neoplastic cells. It was hypothesized that if breast cancer cells are subjected to various amounts of Curcumin, then the highest dose of Curcumin will be effective in inhibiting the proliferation of the cancer cells. To test whether Curcumin is effective against breast cancer, human breast tumor cells, MCF-7, were subjected to a range of concentrations of Curcumin, 0 μM, 10 μM, and 30 μM in a proliferation assay for different amounts of time, 24 hours, 48 hours, and 72 hours respectively. After the specified time of cultivation, the cells were trypsinized and the cell number was counted using a coulter counter. The results indicate that Curcumin did inhibit the proliferation of breast cancer cells in a dose-dependent manner. With increasing concentrations of Curcumin, the percentage of inhibition in each row gradually increased and the percentage of proliferation gradually decreased. The highest effect on breast tumor cells was observed at the 30 μM concentration, as hypothesized. Therefore, the hypothesis was proven correct that Curcumin, specifically the highest dosage, would be effective in inhibiting the proliferation of MCF-7 breast cancer cells. Recent experiments and research has also suggested that Curcumin is effective in protecting the p53 gene, inducing apoptosis, preventing angiogenesis, and has the ability to prevent cancer cells from metastasizing.

Awards Won: