Observations of Phytosterol: A Novel Method of Anti-Cancer Treatment Using Plant Based Steroid Compounds

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The loss of cell to cell adhesion is one of the significant features of cancer. Proteins found in cell junctions, or groups of proteins which helps cells bind to each other, are downregulated in expression in cancer cells relative to the level of expression in healthy cells. Phytosterols are plant based steroid compounds, commonly found in plant stanols and sterols. In its chemical structure, it is similar to human cholesterol. While there has been a lot of research done regarding the effects of phytosterol on good and bad cholesterol levels in human diet, there have few studies done regarding phytosterol and its effects on cancer. While phytosterol can be seen in certain cancer supplements, the studies done regarding phytosterol are either correlational or small case studies. The goal of this project was to determine whether the claims made about phytosterol were viable. The project was conducted by treating three different groups of neuroblastoma cells (SH-SY5Y) with phytosterol and determining the intensity of the cell binding proteins within the cells. The proteins E-cadherin and gamma-catenin were upregulated in expression after treatment, however the protein T3 was downregulated in expression after treatment. While E-cadherin and gamma catenin are found in the Adherens Junction, the cell junction primarily responsible for cell binding, T3 is found in the tight junction, which is responsible for tight cell binding, leading the researcher to believe that phytosterols react different to different cell junctions.

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