

Olivia Sayer

*Beehive Propolis: The Effects of Caffeic Acid Phenethyl Ester on Cancer Cell Proliferation and Its Complimentary Use with Chemotherapeutic Agents*

The purpose of this experiment was to determine whether caffeic acid phenethyl ester (CAPE) is effective in killing cancer cells both on its own, and in combination with certain chemotherapeutic agents. The hypothesis was that the CAPE by itself would measurably inhibit cancer cell proliferation, and in combination with the various chemotherapeutic agents would enhance the chemotherapies' effects.

Human bone, prostate, and breast cancer cells were tested for proliferation with varying concentrations of CAPE and chemotherapeutic agents. The cells were evaluated in normal and starved conditions to assess proliferation inhibition due to treatment vs. medium. After treatment and incubation, the cells were assayed using a micro-plate reader to analyze cell viability via fluorescence. The results from each plate read were normalized to the untreated wells and averages of each set of wells were taken.

On its own, each chemotherapeutic agent did notably inhibit proliferation, as expected. The CAPE by itself also measurably inhibited proliferation, as effectively as each chemotherapeutic agent, if not more so. Together, the CAPE and each chemotherapeutic agent elicited an additive interaction, meaning that the combined effect of both substances together equaled the sum of the effect of each individual substance.

Although this experiment yielded exciting and promising results, there are still many opportunities for continued and expanded research and possibly additional valuable results. These opportunities include testing other types of cancers, other cell lines, varying incubation times, and using techniques such as Western Blot or ELISA to analyze not only amount of proliferation, but protein/pathway activity.