



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>San Singh</b>	<b>Project Number</b> <b>J1430</b>
<b>Project Title</b> <b>Curcumin vs. Cancer: The Effects of Curcumin on MCF7 Breast Cancer Cells and A549 Lung Cancer Cells</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of this experiment was to observe the effects of curcumin on cancer. Cancer is a disease of genes which causes cells to mutate and then spreads throughout the body. It can often be a fatal disease, if not treated early. Curcumin is a substance found in a commonly used household spice as turmeric that has anti-proliferative and anti - inflammatory properties. My hypothesis stated that curcumin would have a devastating effect on the MCF7 and A549 cancer cells. Due to the fact that cancer is believed to be caused by forms of inflammation, I believe that the curcumin will have an adverse effect on the cancer cells. <b>Methods/Materials</b> MCF7 breast cancer cells, A549 lung cancer cells, 240 micromolars of curcumin, 1 stocked cell culturing lab, 4 twelve well plates, 1 incubator, 1 pipetter, 50 pipets (1mL, 5mL, 10mL), 1 Coulter Counter, 1 Microscope, 1 safety gear, and 1 Computer. <ol style="list-style-type: none"><li>1. Obtain all needed materials</li><li>2. Using the Coulter Counter, place 150,000 MCF7 cells in each well of two twelve well plates. Repeat the process with the A549 cells in the remaining plates. Label them. One set should be for 24 hours, the other should be for 48 hours. Within these, there should be a row of wells labeled Control(0 micromolars), as well as Low Dose(10 micromolars) and High Dose(50micromolars).</li><li>3. Take pictures of the cells as they are now with the microscope before treatment.</li><li>4. After 24 and 48 hours, take pictures of the plates, trypsinize the cells, and count the number of cells left with a Coulter Counter.</li></ol> <b>Results</b> I observed that the curcumin treated cells' population was reduced to a mere 2% of what it was originally. I also observed that the cells to which no treatment was done almost doubled in population, due to the accelerated proliferation of cancer cells, which is one of the reasons they are so deadly. <b>Conclusions/Discussion</b> I discovered that my hypothesis was correct and that curcumin had a severe effect on the cancer cells. My findings can be used by researchers trying to create drugs that can reduce the symptoms of cancer. It can also be incorporated in the diets of cancer patients in order to alleviate or even cure the disease.	
<b>Summary Statement</b> The goal of my experiment was to determine the effects of curcumin on MCF7 breast cancer cells and A549 lung cancer cells using multiple doses of curcumin after time intervals of 24 and 48 hours.	
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