



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) San Singh	Project Number S1521
Project Title The Effects of Azadirachta indica Oil on MCF7 Adenocarcinoma Cells	
Abstract Objectives/Goals The purpose of this experiment was to determine the anti-populous effects of azadirachta indica oil on MCF7 breast cancer cells. Azadirachta Indica is a tree that is known for its incredibly potent medicinal properties, which comes from over 150 various medicinal compounds which can be isolated from the oil, seeds, and bark of the tree. My hypothesis states that azadirachta indica will have an incredibly devastating effect on the population of cancer cells due to its anti-inflammatory, immunostimulatory, anti-oxidative, and anti-adhesive properties.	
Methods/Materials Fully Stocked Cell Culture Lab, MCF7 Breast Cancer Cells, 100% Azadirachta Indica Oil, MTS reagent, Safety Gear 1. Revive and grow frozen MCF7 breast cancer cells. 2. Plate three 96 well plates for the 1 hours, 24 hour, and 48 hour measurements. Within these, create four rows for 1, 2, 5, and 10µL amounts of neem oil and 5,000 MCF7 cells per well. Within these rows, create three repetitions. Then create one more plate for a Standard Curve with 0,5,10, and 20 thousand cells per well. 3. Induce the treatment of neem oil. 4. Incubate the cells according to the amount of time they are labeled for. The Standard Curve will be measured after the first hour, and then again after the fourth hour, as a basis for control. Once the time period has arrived, add the MTS reagent to each well, in doses of 20µL per every 100µL. Incubate the cells once more for another hour to allow for the chemical reaction with the MTS to occur. Then, after this time, use the spectrophotometer to measure the optical density of each well at a wavelength of 490nm. 5. Collect results and analyze the data.	
Results The results of the experiment proved my hypothesis correct. The induction of azadirachta indica oil produced a population drop of a maximum of 83.1% in the cells at 10µL after 48 hours, as compared to the population of the control, which more than doubled within the same amount of time.	
Conclusions/Discussion I discovered that my hypothesis was correct and that azadirachta indica oil 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.	
Summary Statement This experiment showed that azadirachta indica oil had a dramatic effect on the population of MCF7 adenocarcinoma cells, reducing it by 83.1% with the 10µL dose over 48 hours.	
Help Received Used lab equipment at University of Pacific under the supervision of Dr. Jesika Faridi and graduate student Mr. Ashish Sawhney.	