



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

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Project Title Soy: Carcinogen or Prevention?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project is to determine if isoflavone phytoestrogens found in hormone replacement therapies may promote the development of breast cancer tumor cells in menopausal women. The hypothesis is that phytoestrogens will stimulate the overproduction of the hormone estrogen through a surge in the lutenizing hormone level.</p> <p>Methods/Materials Four female mice that were given daily oral supplements of hormone replacement therapy treatment, and four separate female mice were not exposed to soy products of any kind were tested. Each mouse had its own individual cage with half paper shreds, and half wax paper. All subjects received the same amount of food each day at the same time over the trial period. Both received 2 fl. oz. of distilled water a day, and manipulated subject were also given crushed hormone replacement therapy tablets in their water. Every night, urine samples were taken and distributed on an ovulation test that gave the exact lutenizing hormone level.</p> <p>Results After the first 72 hours, the controlled group's LH level remained steady at a rate of 7.0, while the manipulated group rose from an average of 7.3 to 11.4. Subject 1 experienced an LH surge from days 4 to 6, but returned to normal two days later, which could have been due to natural circumstances. At the conclusion, the controlled group's level was still constant at 7.5, while the manipulated group's had surged to 23.6. The manipulated group also experienced negative physical effects, such as loss of appetite and fatigue.</p> <p>Conclusions/Discussion The hypothesis was supported by the data collected. Over the ten-day trial period, the mice's hormone level jumped about 16 points and grew at a constant rate to levels abnormally high. Research suggests that the hormone level will continue to rise long-term and tumor cells have a greater chance of developing due to the decreased effectiveness of cancer alpha-blockers.</p>	
Summary Statement Testing lab mice with Hormone Replacement Therapy (HRT) to determine if the artificial isoflavone phytostrogen may increase the subject's estrogen rate, which stimulates breast cancer tumor cells to develop.	
Help Received Parents supervised treatment of mice	