



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Saachi Jhandi	Project Number J1722
Project Title Uncovering the Gastrointestinal and Cardiac Safety of Supplements Commonly Used by Patients with Parkinson's Disease	
Abstract Objectives/Goals My experiments objective was to assess the safety of Alpha Lipoic Acid, CoQ10, Vitamin D and combinations of these supplements on the gastrointestinal and cardiac systems. These supplements are commonly taken by patients with Parkinson's disease. 96% of patients with Parkinson's are over the age of 50 years, and there is increase in incidence of cardiac and gastrointestinal problems with age. I believed that these supplements and their combinations would be safe for the gastrointestinal and cardiac systems. Methods/Materials In vivo experiments were conducted on Daphnia Magna for the cardiac testing. Cardiac Safety Test (safe under normal stress conditions): 0.5 ml of water containing 1 daphnia was placed on a blank microscope slide. A timer was started for 15 minutes. The heart rate of the daphnia was recorded. Once the timer stopped, 1 drop of CoQ10 was placed on the daphnia being examined, 15 minute timer was started once again. These steps were repeated three more times. This method was used for all other supplements and combinations. Cardio-Protective Test (protective against elevated stress conditions): Hydrogen Peroxide was used to induce cardiac stress in the daphnia. The daphnia were placed in set amounts of the supplements and their combinations for 24 hours, and the same procedure as the cardiac safety experiment was used except 1 drop of H ₂ O ₂ was added to the daphnia in 15 minute intervals. Gastrointestinal Safety Test (in vitro test): Kirby Bauer method was used. Petri dishes were inoculated with MRS agar and L. Acidophilus. Filter disks containing various concentrations of the supplements and combinations were placed on the petri dishes, which were incubated for 72 hours. The zones of inhibition were measured and data was statistically analyzed. Results My hypothesis was partially supported by my findings. All supplements and their combinations were cardiac safe. Alpha Lipoic Acid, CoQ10, their combination, and the combination of all three supplements were found to be cardio-protective. CoQ10 was the only supplement that didn't create a zone of inhibition and was found to be completely safe for the gastrointestinal system. Conclusions/Discussion The use of vitamin D can adversely effect the gastrointestinal and cardiac systems. Alpha lipoic acid and CoQ10 were safe for cardiac and gastrointestinal systems, and protective against oxidative stress.	
Summary Statement This experiment examined the cardiac and G.I. safety of three supplements commonly used by Parkinson's disease patients, my research showed that Alpha lipoic acid and CoQ10 were safe, but vitamin D should be used with caution.	
Help Received Dr. Paramjit Singh for his continual support and teaching me about Parkinson's Disease; My mother for proofreading my work; Mrs. Kelly Coombe for letting me borrow her lab equipment.	