Analyzing the Effects of Herbal Supplements on the Heart Rate of Crayfish While under the Influence of Caffeine

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The purpose of this experiment is to determine whether if crayfish were given caffeine to simulate tachycardia would garlic and motherwort extracts regulate the heart rate and change their behavior. This project is significant because cardiovascular disease is a serious problem in the U.S. This disease is also one of the leading causes of death in America. Beta blockers help the heart but they also produce side effects and long-term problems. Because of the harmful side effects, natural herbs are being tested as possible Beta-blockers that may lower the beats per minute (BPM). To carry out this experiment, crayfish will be used with an EKG to record BPMs. It is hypothesized that the herbal treatment of garlic and motherwort will lower the amount of elevated beats per minute. In order to collect data, the crayfish must first be fully exposed to the treatment solution. After the crayfish have been treated, they are then wrapped in a moist napkin and drilled into. Drilling into the carapace and avoiding breaking the shell, wires are then to be inserted into the holes drilled. Connecting the wires accordingly to the Vernier and adjusting the setting to collect the beats per second and minute. All of the data was then collected into an ANOVA. In conclusion, the data in the experiment supported the hypothesis. It was hypothesized that crayfish exposed to the herbal extracts would have a lower heart rate than the crayfish that were exposed to just caffeine. Garlic significantly lowered the heart rate at an average of 75-80 beats per minute. Motherwort however did not significantly lower the bpm, averaging to 95-100 beats per minute. Crayfish exposed to caffeine had an average of 113- 120 bpm and control had 68-70 bpm overall.

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