Casein Hydrolysate and the Effects on the Heart Rate of Daphnia magna

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An essential component of human diets is dairy because it has a unique effect it has on the human body due to a protein called casein. This protein has angiotensin receptor blockers that affect the cardiovascular system in several ways: including heart disease and a possible correlation with lower blood pressure. This project aimed to find if there was a correlation between the protein casein hydrolysate, that is found in milk, and the heart rate of daphnia. Daphnia are miniscule water fleas and due to their transparent bodies, the heart rate can be easily observed. The daphnia were exposed to 4 different concentrations of casein hydrolysate, being 2 mL, 4 mL, 6 mL and no casein. They were placed under a microscope and their heart rate was observed for 10 seconds. It was hypothesized that the casein hydrolysate would lower the heart rate of the daphnia as the concentration increased. Using a two sample T test and an ANOVA test, a consistent P value of <0.0001 at a significance level of 0.05 was achieved for every test run meaning the hypothesis can be accepted. The results of this experiment clearly showed a correlation with a slower heart rate as the concentration of casein increased, which supports the hypothesis. As exposure time increased, the heart rate continued to decrease.

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