The Effect of Bacillus cereus on the Central Nervous System of Dugesia tigrina

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The purpose of this study was to determine whether the bacteria Bacillus cereus had any effect on the central nervous system of planaria (Dugesia tigrina). This study was conducted at a local high school laboratory from October to December 2021. Once the planaria arrived, they were divided into five groups, with three control groups and two experimental groups. Afterward, the planaria were put into a behavior chamber to test their behavior on different stimuli in order to see if the bacteria caused any changes in their movement, as their reaction to the stimuli was based upon their nervous system health. These tests were scored using a contrived unit called the position value, which was the number of planaria from the right well minus the number in the left well of the chamber, and a two-sample t-test was conducted to analyze the data. The final mean values of each group's position value displayed seemingly significant results, to which a two-sample t-test, with an alpha level set at 0.05, revealed a p-value of .016 and .036 for light and chemical stimuli, respectively. This statistically significant value supported the research hypothesis, which was that if the D. tigrina were fed B. cereus, then their central nervous system would be impacted, and thus show corresponding behaviors. In summation, the bacteria B. cereus has the potential to cause serious harm in the central nervous system for planaria, which can then be applied to the overall neural health of humans as well, as the planaria are considered the evolutionary ancestors of the human CNS.

Awards Won:
Fourth Award of $500