The Effects of Lithium on Insomniac Drosophila melanogaster

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Insomnia is a condition occurring in 30% of Americans and it is known to significantly impair a person's cognitive function (Pirone et al., 2016). While the benefits of lithium on memory and longevity (Castillo-Quan et al., 2016) has been shown, this experiment studies the effects of lithium on the memory of insomniac (Inc) Drosophila. Five experimental groups were constructed as follows: wild-type given plain water, Inc given plain water (control), Inc given 50mM of lithium water, Inc given 15mM of lithium water, and Inc given 1mM of lithium water. All of the Drosophila were administered the water or different lithium concentrations (50mM, 15mM, 1mM) the night before experimentation. On the day of the experimentation Drosophila were taught to associate an odor with a sucrose reward and then tested using a t-maze. The results obtained showed that lithium did improve the cognitive ability of Inc Drosophila increasing the performance index, which is the difference in percentage of Drosophila that went to the side of the maze, that had the odor associated with the sucrose, and those that went to the wrong side. This shows the percentage of the Drosophila that successfully associated the correct odor with the sucrose. The performance index increased from -48% to 83% for the Inc 50mM Drosophila, -48% to 80% for the Inc 15mM, and -48% to 74% for the Inc 1mM. This is important because it shows a promising future for the use of lithium to improve memory in people with insomnia.

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