The Physiological Effects of Noise Pollution on the Cardiovascular System of D. melanogaster

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In this study, the effect of noise pollution exposure during the prenatal stage, on D. melanogaster's cardiovascular ability, was investigated. It is hypothesized that larvae exposed to excessive noise pollution, will have a weaker cardiovascular system as adults, evident by a decrease in lateral and horizontal activity. An experimental group was established by exposing larvae to noise pollution (90 db at 190 hz) while in a sound proof container for 8 days in the prenatal stage. Larvae in a sound proof container, but not exposed to noise pollution, served as the control. Adult flies from which the larvae produced were sacrificed at days 4-5. Larvae hatched at approximately day 9 and newborn flies were tested for behavior and flying movements on days 10-11. Flies were tested for changes in cardiovascular ability either by being situated in a Drosophila Activity Monitor for two days, or a stress test. In the Drosophila Activity Monitor, experimental flies broke the infrared beam dividing the horizontal test tube enclosing the flies an average of 19.5 times per half hour. Control drosophila broke the infrared beam an average of 21 times per half hour. In the stress test, an average proportion of 0.04 of the total experimental drosophila reached the top of the apparatus of the stress test. An average proportion of 0.20 of the total control flies reached the top of the apparatus after 20 minutes. This study implies that drosophila prenatally exposed to excessive noise pollution demonstrate a difficulty in performing vertical and horizontal movements. From this study, it can also be postulated that there is a link between noise pollution and the weakening of the cardiovascular system, and pregnant mothers should consider this risk when living in a noise polluted area.

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