The Effect of Malathion on Human Epithelial Cell Line DNA BEAS-2B: RBx8

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This project studied the genetic effect of an organophosphate pesticide, Malathion, on a human epithelial cell line. Specifically, what genetic changes result in the Retinoblastoma tumor suppressor gene. This experiment mimicked the idea that inhaling large amounts of the pesticide in a short amount of time, or in small increments over time, could cause genetic changes or even and cell death. The data collected supported the hypothesis that cells treated with Malathion will display gene mutations that may be linked with cancer and cell death (Pluth, et al, Cancer 1996). Polymerase chain reaction, or PCR, was used to amplify the RBx8 gene in both the control and the treated. Two treated and one control DNA amplicons were sequenced, and run against the National Center for Biotechnology Information's data bank on genes. The effects of the organophosphate pesticide was measured in terms of any variation from the control. The treated samples experienced cell stress and death that reduced the amount of DNA recovered. The collected data shows that a mutation occurred in one of the treated samples in the Retinoblastoma tumor suppressor gene. The agricultural community exposed to Malathion on a regular basis may have increased chance to develop a gene mutation. Only one gene was sequenced because of expenditure limits, so the full impact of Malathion on the cell is unknown until further research can be done.

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