The Effect of Tattoo Ink Pigments on the Reverse Mutation Rate in E. coli Strain 49979

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Can tattoo ink potentially cause cancer? Chemicals in tattoo inks have caused many adverse effects on the human body. The Food and Drug Administration has launched investigations into concerns about ink safety despite the lack of research conducted and has never approved pigments. The purpose of the experiment was to determine whether different tattoo ink pigments -- black, red, blue, and yellow -- are mutagenic and therefore carcinogenic, through the Ames Test, due to the presence of benzo(a)pyrene, one of the chemicals found in (black) tattoo inks, proven in animal tests to cause skin cancer. It was predicted that if different tattoo ink pigments were tested on the reverse mutation rate in E.Coli Strain 49979, then the black ink pigment would cause the bacteria to grow through reverse mutations thus proving it to be a mutagen and a probable carcinogen. This project was conducted in the Genetics Laboratory at a local university, where assistance was provided throughout experimentation. Water (negative control) and methyl methane sulfonate (positive control), were placed on agar plates with E. Coli. All plates were incubated and the bacteria colonies were counted and analyzed. After conducting the experiment, it was concluded that the positive control is a mutagen while the negative control and all of the tattoo ink pigments are not mutagens to the specific bacteria strain, E. Coli 49979. The results are inconclusive, however, the pigments can still possibly be mutagenic by causing different mutations undetectable by the strain or by changing into mutagens after metabolization.

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