The Effects of Nanosilver on Planaria

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Silver has long been associated with antibacterial properties, which at high enough concentrations, could prove troublesome for many aquatic organisms. In particular, when silver is dissolved in solution at high concentrations, the metallic silver ions may bind to form a surface, which ultimately leads to the formation of silver nanoparticles with radii typically ranging from 10 nm to 100 nm. The silver nanoparticles can easily absorb onto most surfaces, potentially leading to disastrous consequences for some organisms. The purpose of this experiment was to investigate the effect of nanosilver on planaria in an effort to better understand its potentially deleterious effects in an aquatic ecosystem. It is hypothesized that increasing the concentrations of nanosilver will result in greater rates of death in planaria. Solutions containing nanosilver of various concentrations were prepared using a commercial colloidal silver product. These solutions were then placed into individual petri dishes. Girardia tigrina was chosen as the model organism for this experiment since it is commonly found in many aquatic ecosystems and may be easily monitored for 6 hours. The experiment was repeated 6 times. More deaths occurred with increasing concentrations and no planaria died in the control group. More deaths were evident in the highest concentrations with 51% and 73% deaths. Interestingly, additional data analysis suggests that most deaths occurred between the 4th and 6th hours of observation, suggesting that the effect of the silver may not be immediate. The data supported my hypothesis that nanosilver products added to the environment are toxic to planaria.

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