Is Tiny Mighty? Phase II

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Nanoparticles are easily finding their way into the environment much easier than before due to them being in consumer products such as food and the lining of clothing. If enough nanoparticles accumulate in the environment, it could be very harmful to living ecosystems such as algae. If nanoparticles are harmful to algae cells, then they could be harmful to other living cells as well. The purpose of this experiment was to determine the effect of silver nanoparticles on the growth of Chlorella vulgaris. The research was conducted by placing Chlorella in growth medium with varied amounts of nanoparticles and using a spectrophotometer to record the absorbance and algae concentrations over time. The data showed that the higher amounts of silver nanoparticles were harmful to Chlorella. Compared to the average of the control group, one drop of silver nanoparticles did not have a significant effect on Chlorella growth. As the number of drops increased, there was a significant difference in the absorbance. From 1 drop of silver nanoparticles with the average absorbance of .437 to .120 for the 2 drops of silver nanoparticles shows that its harmful in larger amounts. 2 drops to 5 drops stayed close to the same average with a slight decrease as the drops increased. This study suggests that silver nanoparticles in the environment can have a negative effect if there is a large amount of them present. Nanoparticles can destroy the algae populations which will be detrimental to water ecosystems in which they are a part.

Awards Won:

Air Force Research Laboratory on behalf of the United States Air Force: First Award of $750 in each Intel ISEF Category