Impact of Methylene Blue Dye on Response of Solanum lycopersicum to Stress Caused by High Salinity

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This project investigated the difference in growth of tomato plants experiencing saline stress when injected with methylene blue dye. The procedures followed were similar to those outlined by Aloni et al. including hydroponic growing methods. Methylene blue decreases Reactive Oxygen Species in plants experiencing small amounts of oxidative stress. The decrease in growth from saline stress was compared between a control group and two experimental groups, one with the methylene blue dye as a preventative and the other using it as a treatment. A smaller decrease in growth should occur when methylene blue treatment is applied. However, the t-test performed, did not indicate the results from either experimental group as significant. Making comparisons between the raw data results demonstrates less decrease in growth between the normal growing conditions group. With a larger sample size and eliminating the potential confounding variable of overcrowding, significant results may be possible. Going forward, more plants should be used, providing more data, making accurate results more likely. With more resources, each plant could grow in its own hydroponic tank. The furthering of this research is important because soil salinization is becoming more prevalent due to climate change, specifically because of the salts present in irrigated water, evaporation, and drainage issues. Methods to contend with salinization, assisting plants in growing and fruit-production, are a vital area of research. This investigation aims to establish methylene blue injection as effective against short-term saline stress.

Awards Won: