



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

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Project Title MSG and Cell Growth	
<p style="text-align: center;">Abstract</p> <p>Objectives We think that too much of anything is not good; not specifically MSG. In our project, we aim to prove that any substance in excess will affect microtubule depolymerization by looking at the cell growth of apical meristems in plants with different concentrations of MSG and other substances.</p> <p>Methods We designed the experiment in the following steps: First, pour agar plates to grow Wisconsin Fast Plants. Next, prepare different concentrations of MSG and NaCl for watering. Thirdly, plant Wisconsin Fast Plants in pots and watered with different concentrations of MSG and NaCl. Then, incubate fungi plates with different concentrations of MSG and NaCl in the agar plate. Finally, measure plant heights and the size of the fungi colonies watered by different concentrations of MSG, NaCl, vitamins or sugar and recorded the data every 3 days to find a trend. We used the plant heights and sizes of the fungi colonies as an indicator for cell growth.</p> <p>Results The higher the concentration, the shorter the plant is and therefore the less the cell growth. For example, both the plant watered with the highest (10ml) concentration of MSG and the plant watered with the highest (10ml) concentration of NaCl showed no growth.</p> <p>Conclusions Doing this experiment showed that any substance in excess, such as salt, will affect microtubule depolymerization and therefore cell growth; not just MSG. While high concentrations of MSG did deter growth in the apical meristems of the Fast Plants, so did high concentrations of NaCl. There is no proof that MSG is the sole culprit for microtubule depolymerization. Therefore, our hypothesis was supported. It is a common myth that MSG is especially harmful. However, based on the results of our experiment, I would argue that another common food additive, salt, is just as harmful.</p>	
Summary Statement The project tested different concentrations of MSG and other substances to show that any substance in excess will have a negative effect on cell growth.	
Help Received Heng Yuan Shr	