Investigating the Protective Effects of Chitosan on the Tomato Fruit.

Summary
We planned to test if chitosan would have protective effects over the tomato fruit with regards to spore germination of the pathogen botrytis cinerea, visible bruising and the softness of the tomatoes. Chitosan is derived from chitin, a polysaccharide. A polysaccharide is a polymer which is a large group of molecules consisting of smaller molecules.

We decided to test 120 tomatoes in total, split into two groups of 60. The first group of 60 would be试验1 (Experiment 1) and the second group would be试验2 (Experiment 2). Experiment 1 would feature control tomatoes and chitosan covered tomatoes. The tomatoes would be used to induce a wound to the tomatoes. Half of the tomatoes were from a large supermarket chain, and the other half were sourced from a local farmer. The wound would be induced immediately after the tomatoes had been dropped from a height of 400mm after harvesting. This wound would be induced immediately after harvesting. This wound would be induced immediately after harvesting. This wound would be induced immediately after harvesting. This wound would be induced immediately after harvesting.

The pure chitosan significantly protected the tomato against spore germination of the pathogen botrytis cinerea, and reduced visible bruising. It did not show a significant difference when compared to the control with regards to softness however.

The results of our statistical analysis proved that our observation was significant. We wanted to reject the null hypothesis that chitosan would not cause a significant difference compared to our control. To do this, we performed a t-test after our observation period of 14 days. Our confidence in our results was also reassured upon reviewing the photographic records of our experiments. We also noticed that the pure chitosan had protective effects on the tomato, however they were not as significant as compared to our control.

We wanted our project to be applicable to everyday use if it was to be successful in the future. The chitosan could be produced synthetically by our original process that we planned to use – extracting the chitosan from crabsrawing. If we were to continue with this project, we would order to extract the chitosan from crabswashing in more suitable facilities. This would ensure that the tomatoes would remain attractive to consumers who are interested in an organic diet.

Experiment 1
- We obtained the tomatoes on a daily basis from Monday to Friday at 2 o’clock.
- We employed 20 tomatoes per day. These were categorized into three categories: spore germination, visible bruising and softness.
- Each day we noted the amount of tomatoes scored into each category. Tomatoes were scored on a scale of 1-5 in each category. Tomatoes were scored on a scale of 1-5 in each category. Tomatoes were scored on a scale of 1-5 in each category.
- Tomatoes were scored 6 categories of each tomato: the same day.
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Experiment 2
- Experiment 2 featured 30 home-grown tomatoes and 30 supermarket tomatoes. Each tomato had a wound inflicted upon after 24 hours of treatment in chitosan. This wound was scored in depth and Sm in weight. 20 tomatoes were covered in lab-grade chitosan. 20 tomatoes were covered in lab-grade chitosan. 20 tomatoes were covered in lab-grade chitosan.
- We performed a t-test after our observation period of 14 days.
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Results
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Conclusions
- From our results, it is clear that the application of chitosan derived from a diet pill caused significant changes in the tomato’s ripening processes. These tomatoes will be edible, as the chitosan came from a diet pill that had been approved for humans to consume, hence it dissolved in pure water, which is also safe for human consumption. The application of the “diet pill chitosan” showed some of the properties of spore germination reduction and visible bruising. In addition to this the tomatoes remained firmer compared to our control tomatoes.

Acknowledgments
- We would like to say a huge thank you to Dr. Ed Lavelle and his team in Trinity College Dublin for their gracious donation of pure chitosan to our study.
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Our confidence in our results was also reassured upon reviewing the photographic records of our experiments. We also noticed that the pure chitosan had clearly formed a protective film over the tomatoes. It was clear from the photographs that both diet pill chitosan and pure chitosan had protective effects on the tomatoes.

We wanted our project to be applicable to everyday use if it was to be successful in the future. The chitosan could be produced synthetically by our original process that we planned to use – extracting the chitosan from crabswashing. If we were to continue with this project, we would order to extract the chitosan from crabswashing in more suitable facilities. This would ensure that the tomatoes would remain attractive to consumers who are interested in an organic diet.

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