



# CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

<b>Name(s)</b> <b>Kamya Krishnan</b>	<b>Project Number</b>  36365
<b>Project Title</b> <b>The Effect of Sucralose on the Growth of Gut Microbiota</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objectives and goals for my project were to clarify and prove the health implications of replacing sugar with artificial sugars, as they may be prone to causing less gut bacterial growth. Gut bacteria are a critical part of a human's health, and its decrease in number can lead to lack of nutrients being spread throughout the body, toxins circulating, and bad bacteria flourishing. Especially in America, health is something that our nation is striving to achieve, and artificial replacements, such as sucralose, is what stands as an obstacle to this goal by possibly destroying our bodies. <b>Methods/Materials</b> For my methods and materials, I analyzed the growth of <i>E. coli</i> with sucrose (table sugar), sucralose (artificial sugar), and with no added substrate as my control. I grew them each three times in two different amounts, 0.04g/66.6mL broth mimicking the effects of an intake of 50g of sugar which is the average recommended intake of any sugar, and 0.08g/66.6mL broth mimicking the effects of 100g of sugar which is the minimal everyday intake of sugar by an average American. I grew all my bacteria in LB broth solutions containing the specific solute amounts for 24 hours. I then serially diluted all my substances by 6 dilutions of 1 mL/9 mL broth and took 0.1 mL of my final dilutions and grew them on LB plates to count colony growth. <b>Results</b> The results I found were that the overall growth from all trials combined of the 0.04g trial was neutral from all three groups, but the 0.08g trial is what stimulated a decrease of 1.27B CFU's (13.66%) of the total growth of the sucralose group from the control. On the other hand, with the bacterial growth with sucrose, there was a growth from the total trials of 1.33 CFU's (10.95%) more than the control. The control remained neutral amongst both these variables. <b>Conclusions/Discussion</b> These results help me conclude that large amounts of sucralose causes a decrease in gut bacterial growth and large amounts of sucrose causes an increase in growth, which are both bad for our body. Overall, Sucralose is proven by my experiment to be liable of causing health implications due to bacterial decrease in the gut, which can cause malnourishment, obesity, and yeast infections. This path of research is a sign of proof that sucralose and sugar should not be overly consumed, as it can lead to health issues that can instead be easily be avoided.	
<b>Summary Statement</b> My project explores how different amounts of sucrose (sugar) and sucralose (artificial sugar) intake can cause variations in gut bacterial growth.	
<b>Help Received</b> My mentor, Mrs. Pamela Chow, helped guide me through my methods of LB agar pouring, serial dilution, and replating my diluted growth.	