



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> Serena N. Sampson	<b>Project Number</b> <b>J1607</b>
<b>Project Title</b> <b>Got Bad Breath? The Effects of Polyphenol on Oral Bacterial Growth</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my project is to determine which solution of tea containing polyphenols, black or green, will inhibit the growth of halitosis forming oral bacteria when compared to the activity of Listerine and Crest Mouthwash. <b>Methods/Materials</b> To conduct my research, I swabbed the inside of my mouth and two other test subjects using sterile cotton swabs and streaked blood agar plates. One plate per subject was streaked with nothing added and used as a control to show normal growth pattern, size and variations of the colonies. Blank disks were allowed to soak in tea and mouthwash solutions and then placed on another set of blood agar plates. I added mouthwash to the procedure because they are known to kill bacteria in the mouth and this can be used to demonstrate inhibition of growth on the plates. All plates were incubated in my oven at 37 degrees Celsius and observed for zone of inhibition at 24 and 48 hours. The procedure was performed using sterile technique and temperatures were carefully monitored. <b>Results</b> After each trial I observed that there was only one zone of inhibition on each test plate and it belonged to the Crest Mouthwash. The green tea, black tea and Listerine did not have a zone of inhibition. Therefore, they did not inhibit the growth of bacteria. <b>Conclusions/Discussion</b> Studies have shown that polyphenols an antioxidant found in tea leaves, can kill a significant amount of bacteria in your mouth and prevent halitosis and bad breath. I hypothesized that the polyphenols in teas would not inhibit the growth of oral bacteria as well as mouthwash. Based on my results, I have concluded that neither the black tea, green tea nor the Listerine Mouthwash killed a significant amount of bacteria as proven by the lack of a zone of inhibition. My hypothesis was partially correct since one of the mouthwashes did have a zone of inhibition.	
<b>Summary Statement</b> The purpose of my project is to determine the effects of polyphenols found in teas on oral bacterial growth	
<b>Help Received</b> The staff at Glendale Memorial Hospital Laboratory for the lesson in microbiology techniques and procedures	