



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Sriram Somasundaram	Project Number 31336
Project Title Curry Alleviates Stomach Pain: How Curcumin Inhibits Helicobacter pylori, Affects Probiotics, and Enhances Iron Absorpti	
Abstract Objectives/Goals Curcumin is an active component of turmeric, which is a commonly used spice in many cultures and has astounding medicinal properties. Curcumin alone is an antioxidant, has anti-inflammatory qualities, produces anti-cancer activity, is antimicrobial, has anti HIV properties, and may slow down the development of Alzheimer's disease. My project is to test how curcumin inhibits Helicobacter Pylori in the epithelial lining of the stomach. Furthermore, through other tests I would like to show that curcumin preserves probiotics and enhances iron absorption in the body. Methods/Materials I used a Kirby Bauer Disk Diffusion assay with metronidazole and clarithromycin as the control for the initial stage of testing the efficiency of curcumin on H. Pylori. After that I carried out the MIC and the MBC methods to finalize the results. I repeated the tests for curcumin and probiotics, lactobacillus and bifidobacterium. For the iron absorption in the body I used dialysis tubing, centrifuging, and the spectrophotometer. Results The Kirby Bauer had repeated failed results with no inhibition. Curcumin separated from the ethanol in the incubator, so it was unable to spread into the disk. The MIC and MBC however were successful with the MIC at 0.25 mg/mL and the MBC at 1 mg/mL. I carried out the Kirby Bauer, MIC, and the MBC for curcumin and the probiotics and there was no inhibition whatsoever. The percentage of dialyzable iron enhanced by curcumin is approx. 100% within experimental error with the average aliquot concentration being 2.14×10^{-5} . Conclusions/Discussion My hypothesis was correct and my test results confirmed my hypothesis: Curcumin inhibits H. Pylori, does not inhibit bifidobacterium and lactobacillus, and enhances iron absorption. H. Pylori exists in 50% of all adults and is one of the causes of stomach cancers and ulcers. With a simple spice like turmeric, many lives potentially can be saved. Another pro is that curcumin does not seem to harm probiotics in the body. Finally, it can increase the amount of iron that can be absorbed and possibly be a cure for anemia.	
Summary Statement My experiments show that Curcumin inhibits Helicobacter Pylori, does not affect probiotics, and enhances iron absorption.	
Help Received I used the lab equipment at Schmahl Science Workshop under the supervision and mentorship of Mark Kent, Sarah Thaler and Ron Birrell.	