



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Oanh K. Nguyen	Project Number S1315
Project Title Varying Concentrations of Bilobol and Cardanol	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my experiment was to test which acid, bilobol or cardanol, in the epidermis of the Ginkgo biloba seed contributes most to the inhibition of Mycobacterium smegmatis' growth rate. My hypothesis was that both the bilobol and cardanol will have an effect on the growth rate of M. smegmatis and that the stronger the concentration the more it will inhibits. Furthermore, the bilobol will be the most effective out of the two.</p> <p>Methods/Materials I created the 0.5mg/mL, 0.05mg/mL, 0.005mg/mL, and 0.0005mg/mL from a serial dilution of 5mg of bilobol, and the 0.1mg/mL, 0.01mg/mL, 0.001mg/mL, and 0.0001mg/mL from a serial dilution of 1mg of cardanol. I pour 15 plates of each dilutions, resulting in 120 plates, and 50 plates for control of nutrient agar, for a total of 170 plates. I placed the colony of Mycobacterium smegmatis on each of the 170 plates, then incubate them at 27 degrees C. I let the plates establish the growth bacteria and measure their subsequential growth. I record my data in a series of 7 days for four weeks.</p> <p>Results The results of the experiment show that the 0.5mg/mL of bilobol and 0.1mg/mL of cardanol inhibit the most M. smegmatis from their respective series. The control average growth rate over four weeks was 4.22mm, while the 0.5mg/mL bilobol was 2.68mm and 0.1mg/mL cardanol was 2.31mm. The two weakest dilutions from each series (bilobol: 0.005mg/mL, 0.0005mg/mL, cardanol: 0.001mg/mL, 0.0001mg/mL) show no sign of inhibition the first week, but after the second week they were all more effective than the control.</p> <p>Conclusions/Discussion The results of my experiment only support my hypothesis partially. It was true that both the bilobol and cardanol had an effect on M. smegmatis, and the higher the amount of concentration, the lower the bacterial growth rate. However, cardanol proved to be more effective than bilobol when inhibiting M. smegmatis. There is a difference in the amount of acid in the dilution to begin with, therefore if both acid were to be compare on the same scale, there would be a significant difference of inhibition between cardanol and bilobol. Further research is needed to determine at which dilution combinations between these acids would be most effective in inhibiting M. smegmatis without overdoing it. Further studies in this subject would be able to prove if the chemicals in the ginkgolic seed coat would be effective on human tuberculosis.</p>	
Summary Statement This study determined the effects of various bilobol and cardanol dilutions upon Mycobacterium smegmatis.	
Help Received Used lab equipment at Fresno State University under the supervision of Dr. Wright	