



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Disha Bahl; Jeremy Wang</b>	<b>Project Number</b> <b>S1501</b>
<b>Project Title</b> <b>Taraxacum Officinale Root: An Antibiotic</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Taraxacum Officinale, otherwise more commonly known as Dandelion, is a large species of flowering plants belonging to the family, Asteraceae. The purpose of our experiment is to find whether taraxacum roots have antibacterial properties and to see the effectiveness of different concentrations in killing bacteria. We predict that taraxacum roots have antibacterial properties and that the increase in concentration will cause the rise in effectiveness of killing bacteria. <b>Methods/Materials</b> First, we prepared the different concentrations of dandelion root extract by soaking different amounts (0.25g, 0.5g, 0.75g) of powdered dandelion root in 10 mL of each solvent (isopropyl alcohol, hexane, water). Then we centrifuged the tubes to form a pure extraction. After dipping the filter papers in the resulting extracts, we allowed them to dry, and then placed them on top of the bacteria plates along with the neutral control (plain discs), negative control (solvents), and positive control (iodine). We then incubated them for 24 hours and measured the zone of inhibition. <b>Results</b> The Iodine created an 11-15 mm range zone of inhibition on both bacteria and yeast. However, none of the discs dipped in hexane or water extractions produced area of inhibition rings. Only the dandelion root extracted by isopropyl alcohol produced area of inhibition rings. The 0.25g to 10 mL concentration formed 1-4mm rings, the 0.5g to 10mL concentration formed 2-3mm rings, and the 0.75g to 10mL concentration formed 5.5-7mm rings. <b>Conclusions/Discussion</b> Through our experiment, we conclude that antibiotic properties exist in strong concentrations of dandelion root extract, when isopropyl alcohol is the solvent. The 0.75g dandelion roots to 10 mL isopropyl alcohol extraction was the most effective at killing yeast, Bacillus Subtilis, and E. Coli. After conducting multiple t-test analysis, we concluded that this proved our hypothesis correct for all the bacteria tested. Both 0.25g to 10mL, and 0.5g to 10mL extractions showed minute traces of antibiotic properties, however after further t-test analysis, we concluded that there was no statistical significance. In all concentrations tested of hexane and water extractions, no antibiotic properties were observed in any of the bacteria plates. After further t-test analysis, we confirmed that our observations were statistically valid.	
<b>Summary Statement</b> A study aimed at proving the effectiveness of Taraxacum Officinale root as an antibiotic.	
<b>Help Received</b> Mother helped with taping board	