



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

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Project Title Ayurvedic Plant Extracts: An Alternative to Antibiotics	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project is to determine whether four Ayurvedic plants (Aloe Vera, Brahmi, Neem, and Turmeric) can prevent E. coli bacterial growth. The objective is also to determine whether Ayurvedic plants could be a potential alternative to antibiotics.</p> <p>Methods/Materials The four Ayurvedic plants Aloe Vera, Brahmi, Neem, and Turmeric were made into a plant extract with 50% of Ethanol concentration. The plants were individually tested. Various amounts of each plant extract (100µL, 200µL, 500µL, 1mL, 2mL, and 3mL) were added to flasks containing Lauria Birth Nutrient Media, Agar, and E. coli bacteria. One flasks was left for the control, which had no plant extracts. The flasks were put into a shaker for 24 hours. 1mL was taken from each flask as a sample to calculate optical density and estimated amount of bacteria of each flask.</p> <p>Results The Aloe Vera extract wasn't successful in preventing the E. coli bacterial growth. 3mL of the Aloe Vera plant extract increased the amount of E. coli bacteria by 150%. The Brahmi plant extract was more successful than the Aloe Vera plant extract. 3mL of the Brahmi plant extract was able to prevent 60% of the E. coli bacterial growth. The most successful Ayurvedic plant extract in the project was the Neem plant extract. 3mL of the Neem plant extract was able to prevent the growth of 98% of the E. coli bacteria. The Turmeric plant extract was successful, however it didn't perform as well as the Neem plant extract. 3mL of the Turmeric plant extract was able to prevent the growth of 80% of the E. coli bacteria.</p> <p>Conclusions/Discussion It is concluded that the Neem plant extract was the most effective plant extract of the four plant extracts. 3mL of the Neem plant extract prevented 98% of the E. coli bacterial growth. The Turmeric plant extract was also deduced to be effective, however not as much as the Neem plant extract. 3mL of the Turmeric plant extract was effective in preventing 80% of the E. coli bacterial growth. It is concluded that the Brahmi plant extract was somewhat effective, as the plant extract prevented about 60% of the bacterial growth. It is also concluded that the Aloe Vera plant extract is not effective in preventing bacterial growth, as it increased the bacterial growth by 150%. Ultimately, it can be concluded that the Neem, Turmeric, and Brahmi plant extracts are Ayurvedic plant extracts which could be successful alternatives to antibiotics.</p>	
Summary Statement In this project, four Ayurvedic plant extract were tested on E. coli bacteria to see fi they could prevent plant growth, and serve as potential alternatives to antibiotics.	
Help Received I conducted the experiment in my dad's lab, where I was provided some of the materials to conduct the experiment.	