



**CALIFORNIA STATE SCIENCE FAIR  
2007 PROJECT SUMMARY**

<b>Name(s)</b> Ashish B. Pamula	<b>Project Number</b> <b>J1428</b>
<b>Project Title</b> <b>Herbs: Are They the Secret behind Healthy Teeth and Gums? Phase III</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of my project was to find out if the herbs Clove Oil and Neem Extract could help prevent oral disease causing bacteria Streptococcus mutans and Porphyromonas gingivalis from growing under lab conditions. <b>Methods/Materials</b> Materials: The bacteria Streptococcus mutans and Porphyromonas gingivalis, blood agar plates, the herbs Clove Oil and Neem Extract, various toothpastes, and sterile paper disks. Methods: Streptococcus mutans and Porphyromonas gingivalis were plated on blood agar plates. Sterile filter disks soaked in herbs or toothpastes were placed on the plates spread with the bacteria. The plates were incubated at 37 degrees Centigrade for 48 hours. Bacterial growth inhibition diameter was measured. <b>Results</b> In the control plates, there was no bacterial growth inhibition surrounding the disks. The diameter of the bacterial growth inhibition surrounding the disks soaked in Clove Oil for both bacteria was the largest. There was no bacterial growth inhibition surrounding the disks soaked in Neem Extract for both bacteria. There was smaller growth inhibition zone around disks soaked in various toothpastes for both bacteria. <b>Conclusions/Discussion</b> I found out that Clove Oil is a strong anti-bacterial agent against not only general bacteria that live in the oral cavity, but also against oral disease causing bacteria such as Streptococcus mutans and Porphyromonas gingivalis. In contrast, Neem Extract that was effective against the general oral bacteria, was not effective against the oral disease causing bacteria. My conclusions indicate that the hypothesis regarding Clove Oil being a strong anti-bacterial agent was proven correct whereas the hypothesis regarding Neem Extract was surprisingly incorrect	
<b>Summary Statement</b> Clove Oil is a strong anti-bacterial agent against the oral disease causing bacteria Streptococcus mutans and Porphyromonas gingivalis.	
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