Efficacy of Listerine and ACT Mouth Rinses on Oral Bacteria

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RESULTS

Figure 1. Control group versus the ACT mouthwash with anti-cavity purpose.

Figure 2. Control group versus Listerine mouthwash with anti-gingivitis and anti-plaque purpose.
Abstract

The use of mouth rinse is a growing aspect of oral health care. To test the hypothesis that the active ingredients of Listerine are a better oral bacterial killer than the active ingredient of ACT mouth rinse, bacterial swabs were taken in two mouths. Only the observation of bacteria was recorded for the purposes of this experiment. Results indications that Listerine is a better mouth rinse based on oral bacterial count, although no statistical or analytical data can support this claim. Such an absence of significance may occur because of the lack of available microbiological techniques.

Introduction

There is a growing public concern of the significance of oral health care, with the use of mouth rinses being one of the most interesting aspects of oral health care (Okuda et al, 1998). However, little is known about the antibacterial effects of an anti-plaque and anti-gingivitis product against an anti-cavity product. It has been suggested that mouth rinses serve a variety of purposes, including to destroy bacteria and to deodorize. Also, it has been shown that rinsing with chlorhexidine mouth rinse is the most effective method of controlling plaque (Akande et al, 2004). However, many anti-plaque effects have been reported using commercial mouth rinse (Akande et al, 2004).

Though many experiments have studied the effects of mouth rinses on plaque, little attention has been given to the effect of mouth rinses on the growth of bacteria. The purpose of this study was to test the efficacy of Listerine and ACT mouth rinses on oral bacteria. This led to the hypothesis that the anti-plaque and anti-gingivitis active ingredients of Listerine would be more effective on oral bacterial load count than the anti-cavity active ingredient of ACT.
Methods and Materials

Two males, my partner and myself, participated in this two-week study. There were no prior agreements or standards set before the lab began, but it should be noted that my partner did not brush his teeth that morning and I did. The experiment was conducted in room Science III-235 on February 20th under standard conditions.

Bacteria was obtained from our respective mouths using a cotton swab and placed on an agar dish. Both dishes were drawn with a line down the middle, with each side labeled Control and ACT (Figure 1) or Control and Listerine (Figure 2). Before using the mouth rinse, the initial swab was brushed on the “control” side. We then proceeded to use our mouth rinses, following the directions as stated on the label. I used the ACT mouth rinse (active ingredient: sodium fluoride 0.05%) and rinsed for 60 seconds, while my partner used Listerine (active ingredients: eucalyptol 0.092%, menthol 0.042%, methyl salicylate 0.060% and thymol 0.064%) for 30 seconds. We then swabbed our mouths again and brushed the samples on the labeled agar dishes. The dishes were then labeled with our names and section numbers and placed in the back of the room.

After one week, we observed our respective agar dishes. No data was analyzed and no statistics were used. The only data determined was observing our dishes and determining the bacterial growth.

Discussion

Our results indicate that Listerine is the more powerful mouth rinse based on oral bacterial count, supporting our hypothesis. My partner’s initial bacteria appeared to be *Staphylococcus* or *Micrococcus*. The ACT mouth rinse turned the bacteria white, appearing to either kill the bacteria or make it weaker. My agar dish appears to have
shown *Flavobacterium* based on its size and color. The Listerine appeared to destroy nearly all the bacteria on the agar dish. Differences in the initial bacteria can be due to the fact that my partner did not brush his teeth that morning, while I did.

However, it is hard to measure the efficacy of the mouth rinses because of the lack of statistical and analytical data. No measurements were calculated and we have a limited knowledge of bacteria. It is hard to determine if the white cells on the ACT agar dish are bacteria or dead cells. Since we did not take any measurements and based our experiment solely on observation, it is hard to determine if the Listerine is truly a stronger mouth rinse based on oral bacteria count.

Future experiments should include more variables, such as the use of other mouth rinses and comparing mouth rinse to different toothpastes. The use of microbiological statistical and analytical techniques would greatly improve future experiments. This would support my claim that ACT could destroy bacteria just as well as Listerine. Only further experimentations will determine agreements with our findings and the development of statistical and analytical significant data.

*Literature Cited*
