EX-VIVO ANALYSIS OF THE ANTIMICROBIAL PROPERTY OF CRUDE EXTRACT OF CINNAMON AS A MOUTH RINSE

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ABSTRACT

Background: Natural products have been found to be effective with least side effects as compared to commercially available synthetic treatment options. Medicinal plants produce bioactive molecules which show both antibacterial and antifungal activities. The bark powder ethanol extract and root oil of cinnamon has antimicrobial and anti-inflammatory property. Cinnamon has a long history of usage as a medicinal product. Chinese medicines have used cinnamon as a neuroprotective agent. It is also known to be used for the treatment of type 2 diabetes mellitus. Since the antibiotic resistance is increasing, and natural products are known to have antimicrobial property, it seemed worthwhile in assessing its efficacy as a mouth rinse.

Aim & objective: To assess the antimicrobial property of cinnamomum verum as a mouthrinse compared to 0.12% chlorhexidine gluconate.

Materials and methods: 30 participants were selected randomly for the study. They were divided into 3 groups. Pre and post saliva samples were collected before and after the administration of the respective mouth rinse. The microbial count was calculated from the samples.

Results. Among the 3 groups chlorhexidine showed better antimicrobial property than crude extract of cinnamomum verum, but crude extract of cinnamon did show a reduction in the microbial count.

KEYWORDS: Cinnamon, Mouthrinse, Antibacterial property, Herbal mouthrinse, Chlorhexidine

INTRODUCTION

Spices and herbs are commonly used all around the world since prehistoric times due to their ability to render antimicrobial and other beneficial properties. Cinnamon is known to contain many antimicrobial compounds that act against Gram-positive and Gram negative organisms and also was found to be active against Streptococcus mutans. Recently the antibacterial activity of the fresh leaf extract of C.zeylancium against Enterococcus faecalis showed inhibition zones varying with different concentrations of the extract. It was also seen that there was an antibacterial effect on S.mutans and L.acidophilus which are involved in the dental plaque and biofilm formation. Thus it was felt worthwhile to assess the efficiency of cinnamon extract as a mouthrinse.

Materials and Methodology

30 patients who came to the department of periodontics, Saveetha dental college, were randomly selected. They were asked to pick tokens, which were labelled as 1,2 and
3 and the groups were normal saline mouthrinse, 12% chlorhexidine and cinnamon extract respectively. All the groups had 10 patients each. They were asked to spit into a sterile collecting bottle pre and post administration of the respective mouthrinse after swirling the rinse for a minute. 2ml of saliva was collected from each of the patients.

Inclusion criteria: Volunteers who provided the informed consent, with no history of any dental treatment or antibiotic usage for the past 3 months and who had similar oral hygiene conditions were included in the study. Exclusion criteria: volunteers with any systemic diseases, use of any medications for past 3 months were excluded from the study.

Preparation of the cinnamon extract: Ceylon cinnamon was ground to a fine powder in a grinder and 10 gm of the powder was mixed with 100ml of distilled water and was kept in a water bath at 60°C for five hours and then was distilled through a sterile filter paper and 5ml of the solution was administered to each of the patient 1.

RESULTS

<table>
<thead>
<tr>
<th>Group A (saline)</th>
<th>Group B (chlorhexidine)</th>
<th>Group C (cinnamon)</th>
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<tbody>
<tr>
<td>Confluent growth</td>
<td>Confluent growth</td>
<td>Confluent growth</td>
</tr>
<tr>
<td>There is no difference in density</td>
<td>There is 60% reduction in density</td>
<td>There is approximately 40% I reduction in density. There is complete elimination of CONS. There is decrease in entroccoci count.</td>
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DISCUSSION

This study was conducted with an aim of evaluating the efficiency of cinnamon as a mouthwash when compared to commercially available chlorhexidine gluconate. Commercially available products are known to alter the oral microbiome and hence can lead to undesirable effects like staining of the tooth surface whereas natural products have lower risks of causing undesirable side effects. An earlier study that was conducted to evaluate the plaque and the gingival inflammation by the use of chlorhexidine and cinnamon extract showed that even though there was a greater reduction in the plaque levels and gingival inflammation with chlorhexidine, there was no statistically significant difference among chlorhexidine and cinnamon. The present study also showed similar results, wherein chlorhexidine had greater antimicrobial effect than cinnamon. In another study, it was also shown that cinnamon has excellent antimicrobial property against Mutans streptococcus and Lactobacilli. Even though there is good antimicrobial property, the amount of biofilm and plaque that can be controlled by natural agents as compared to commercially available products still need to be evaluated.

CONCLUSION

Even though chlorhexidine showed better antimicrobial property than crude extract of cinnamomum verum, crude extract of cinnamon did show a reduction in the microbial count. Further studies may be needed to prove its full potency.

REFERENCE