Comparison of the Effectiveness of Chewing Manalagi Apples (*Malus sylvestris*) and Green Melon (*Cucumis melo* L.) as Self-Cleansing Regarding Changes in the Debris Index on Dentistry Students of Universitas Prima Indonesia

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1. Introduction

Efforts to improve dental and oral health can be carried out through general preventive treatments that can be carried out mechanically, such as gargling with mouthwash and brushing teeth frequently and effectively. Physiologically, apart from general prevention, it turns out there are several ways to minimize fine particles in food that end up in debris or calculus, including by self-cleansing. Chewing food that contains fiber and water has a major role in cleaning up food waste by stimulating the release of saliva secretions. Self-cleansing is a procedure that occurs naturally in the oral cavity, which plays a role in cleaning. Self-cleansing This can occur if there is a process of chewing fibrous and watery food in the mouth.

People usually know that fruits are good for health systemically, but maybe not many people know that they also play an important role in maintaining healthy teeth and mouth. Foods such as fiber-rich fruit and water can help clean teeth of food debris and can even help dissolve the sugar that sticks to teeth, especially in areas that are difficult to reach, such as between the teeth.¹-six

Chew fruit that is high in water and fiber, such as manalagi apples (*Malus sylvestris*) and green melon...
(Cucumis melo L.), has a fairly good role in a person's oral cavity. The ability to power self-cleansing a good one can help prevent the formation of debris on the teeth. The fruit content, which is rich in fiber and water, comes from manalagi apples (Malus sylvestris) and green melon (Cucumis melo L.) it can stimulate the rate of saliva secretion and can play a role in neutralizing acid in the oral cavity. Manalagi apples (Malus sylvestris) the medium-sized ones contain 84% water, 0.4 grams of fiber, and additional substances are tannins. Tannin is a chemical substance that can help clean and refresh the oral cavity, while melons are green (Cucumis melo L.) and contain 93% water and 0.4 grams of fiber. This study aimed to compare the effectiveness of chewing manalagi apples and green melons in cleaning dental debris on dentistry students of Universitas Prima Indonesia

2. Methods

This study is experimental research with a pre-post test design approach. A total of 30 research subjects participated in this study, where the research subjects met the inclusion criteria. The inclusion criteria for this study were students from the Faculty of Dentistry, Universitas Prima Indonesia, cooperative and willing to take part in the research, the sample was willing to have scaling before the research started, did not use orthodontic equipment, brushed their teeth before the research started and the sample was not allowed to eat any food before the research started. This study has received approval from the medical and health research ethics committee of the Faculty of Medicine, Dentistry and Health Sciences, Universitas Prima Indonesia.

Debris includes food that remains attached to the surface of the teeth and is found in the spaces between the teeth and the gingival area. The clinical surface area of the teeth, which is easily visible from inside the mouth, is one of the areas examined, covering the anterior to the posterior, starting from the incisors to the second molars. Manalagi apples (Malus sylvestris) 100 grams using the chewing technique on both sides of the jaw, approximately 33 times in 2 minutes, and green melon (Cucumis melo L) 100 grams using a chewing technique on both sides of the jaw, approximately 33 times in 2 minutes. Data analysis was carried out using SPSS version 25 software. Univariate analysis was carried out to present the data frequency distribution for each test variable. Meanwhile, bivariate analysis was carried out to determine the relationship between the test variables for each variable, with a p-value <0.05.

3. Results

For the manalagi apple chewing group, a significant decrease in the debris index was seen before and after the manalagi apple chewing test was carried out by Wilcoxon based on Table 1. Table 1 shows the test results of Wilcoxon, which obtained a value of p = 0.000 < 0.05. These results show a significant change in the debris index before and after chewing manalagi apples (Malus sylvestris).

In the group chewing green melons, a significant decrease in the debris index was seen before and after chewing green melons Wilcoxon based on Table 2. Table 2 shows the results of the Wilcoxon test, which gives a p-value = 0.000 < 0.05. It can be concluded that there are significant changes in the debris index before and after chewing green melon (Cucumis melo L.).

Table 1. Wilcoxon test results debris index of manalagi apple chewing group (n = 30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
<th>n</th>
<th>Difference</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>1,43 ± 0,73</td>
<td>30</td>
<td>0,76 ± 0,29</td>
<td>0,000</td>
</tr>
<tr>
<td>After</td>
<td>0,67 ± 0,48</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05 significant.
Table 2. Average debris index results for the group chewing green melon fruit (n=30).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
<th>n</th>
<th>Difference</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>1.43 ± 0.73</td>
<td>30</td>
<td>0.58 ± 0.27</td>
<td>0.000</td>
</tr>
<tr>
<td>After</td>
<td>0.85 ± 0.51</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05 significant.

4. Discussion

100 grams of manalagi apples contain 86% water content and 2.1 grams of fiber. The fiber contained in Manalagi apples is a serana self-cleansing best on the surface of the teeth, and fiber can act as a natural brush to help clean food particles in the oral cavity during chewing. The role of fiber in the oral cavity is to shift leftover food particles so that it can help clean debris that sticks to the surface area of the teeth. Apart from that, manalagi apples have water content, which plays an important role in helping rinse away stuck food residue. The water content in manalagi apples will also help stimulate increased saliva secretion, which is useful as a process of self-cleansing in the oral cavity.12-14

100 grams of green melon has a fiber content of 0.4 grams and a water content of 90.8%. The water content of green melons plays an important role in flushing debris on the surface of the teeth. The large amount of water content in green melons will help stimulate increased secretion of saliva, which is useful as a self-cleaning process in the oral cavity. Apart from that, melons have a dense flesh consistency.15-17

The mechanical properties of chewing fruit, which has a high fiber content, have been proven to help remove food particles that stick to the surface of the teeth in the oral cavity. The fiber content in manalagi apples has a brush-like effect on the surface of the teeth. The water content in manalagi apples also helps stimulate saliva secretion to increase the effect of self-cleansing. manalagi apples have denser and larger fibers than green melons, so manalagi apples are more effective in reducing the debris index than green melons.18-20

5. Conclusion

Manalagi apples have better potential to improve self-cleaning of the oral cavity, which contributes to overall dental and oral health.

6. References

8. Hernandez M, Martinez E. Comparative study of the antibacterial efficacy of apple and melon...