The Effect of Tea and Orange-juice on Teeth Color and Whitening by LED Accelerator Lights

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1.2 Abstract

- Today, the processes of teeth bleaching by utilizing oxidation chemical components became a public and important as a cosmetically operative.

- In this project, we study The Effect of drink on Teeth Color and Whitening by teeth Whitening LED Accelerator Lights.

- The drink such as tea and Orange Juice can also cause damage. One of the primary drawbacks to drinking tea is the staining effect it can have on your teeth if we compared Orange Juice.

- We investigate attenuation coefficient of composite resin and tooth in different environment and the attenuation of teeth in tea drink 72 h is equal to 0.336 mm\(^{-1}\) greater than tooth in Orange Juice and clean teeth are 0.216 and 0.165 mm\(^{-1}\).
1.2 Motivation of study
Effect of Drink (orange and Tea) on teeth

Attenuation coefficients

Pure-teeth

Damage teeth by orange

Damage teeth by Tea

LED Teeth Bleaching

Study Exposure time of LED Teeth Bleaching

Study Attenuation coefficients after Laser Teeth Bleaching
1.3 A light-emitting diode (LED) and How does led teeth whitening light really work?

• A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons.

• How does LED teeth whitening light really work?

The LED teeth whitening light will not make your teeth whiter however it will accelerate the teeth whitening gel, thus causing it to react quicker when breaking down tough to fight stains.
## 1.4 Types of light Teeth Bleaching with gel and properties of laser

<table>
<thead>
<tr>
<th>Authors</th>
<th>Wavelength</th>
<th>Setting</th>
<th>Bleaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luk et al. 2004</td>
<td>10.600 nm (CO2)</td>
<td>600 mW 180 sec</td>
<td>Opalescence Extra Quick White Star Brite Nypro Gold</td>
</tr>
<tr>
<td>Klaric et al. 2013</td>
<td>770 nm (Femtosecond diode)</td>
<td>800 mW. 15min Unfocused</td>
<td>Without gel ZOOM 2 Boost Vivastyle 30</td>
</tr>
<tr>
<td>Sulieman ET al. 2005a</td>
<td>830nm(diode)</td>
<td>3 W.30sec</td>
<td>Opus Mix Bleaching Powder +35%HP Liquid</td>
</tr>
<tr>
<td>Carrasco et al. 2008</td>
<td>LED-laser 470/790 nm</td>
<td>40 mW 3 30 sec</td>
<td>Whiteness HP</td>
</tr>
</tbody>
</table>
1.5 Materials and Methods

1. Samples preparation for investigation effect drink of teeth

<table>
<thead>
<tr>
<th>Types of sample</th>
<th>In distillation water</th>
<th>In tea 72 h</th>
<th>In Orange Juice 72 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two human teeth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tetric N Cerum</td>
<td></td>
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</tbody>
</table>
2. Teeth Whitening by LED Accelerator Lights
Show Fig 2 and 3

Figure 1
photographic LED Bleaching System

LED Accelerator (US)

Chairside light-activated whitening gel
2. Teeth Whitening by LED Accelerator Lights
Show Fig 2 and 3

Clean teeth by peroxide solutions → stored in distilled water → chairside light-activated whitening gel

Switch on the LED light (15 min) → Brush teeth

Figure 2 Process of Bleaching by LED
3. Calculate Attenuation coefficient of teeth
6- Results and discussion

1- Effect of tea and orange on Tooth Color and Whitening by Bleaching LED

![Images of tooth samples and shade guide]
2- Investigation attenuation coefficient on pure tooth enamel and tooth enamel in drink (tea and orange-juice)

The attenuation of teeth in tea drink 72 h in is equal to 0.336 mm\(^{-1}\) greater than tooth in Orange Juice and clean teeth are 0.216 and 0.165 mm\(^{-1}\).
Table 4.1 Attenuation coefficient of human teeth

<table>
<thead>
<tr>
<th>Types of tooth</th>
<th>Attenuation coefficient $[\text{mm}^{-1}]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean teeth</td>
<td>0.197</td>
</tr>
<tr>
<td>Tooth in tea 72 h</td>
<td>0.456</td>
</tr>
<tr>
<td>Orang-juce 72 h</td>
<td>0.321</td>
</tr>
</tbody>
</table>
Conclusion

We conclude the following from the results of the present study:

Power bleaching has become an important addition to our cosmetic treatment options and has been shown to be safe when the manufacturer’s instructions are precisely followed. Various light sources can be used to speed up the in-office bleaching process, with a savings of valuable chair time.

On the basis of the experimental conditions in this study, and within the limitations of an in vitro investigation after bleaching, we drew the following conclusions:

1- One of the primary drawbacks to drinking tea is the staining effect it can have on your teeth if we compared Orange Juice

2- we investigate attenuation coefficient of composite resin and tooth in different environment and the attenuation of teeth in tea drink 72 h is equal to 0.216 mm\(^{-1}\) greater than tooth in Orange Juice and clean teeth are 0.216 and 0.165 mm\(^{-1}\).
5.2 Suggestions for Future Works

More laser wavelengths can be used as activation factor for this process, and then we can make a wide comparative study and more accurate assessment to laser performance as accelerator in in-office bleaching.
References


