

# Tetracyclines and tooth discoloration: Nd.YAG and Diode lasers management

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## BACKGROUND DATA

Light-activated bleaching has recently become an important component in cosmetic dentistry by the use of coherent radiation sources(3;6;7) to improve the whitening efficacy of some bleach materials.

## AIM OF THE STUDY

The aim of this clinical study is to evaluate the capability of two different laser wavelengths to activate the whitening chemicals in bleaching treatment of tooth discoloration due to tetracycline .

## MATERIALS AND METHODS

Sixteen patients (two cases are analyzed here) with anterior teeth discolored by tetracycline (both grade 3 of Feinman scale) (5) were treated in two steps, at one month interval. In each step every tooth was irradiated three consecutive times for 30" at ten minutes intervals, in order to respect the temperature releasing time .

The whitening compound (35% hydrogen peroxide : Bleach'n Smile: Schutz D.G.GmbH-Germany) was positioned on the darker portion of the teeth, and a chemical dam on remaining portions and gums. The handpiece ( a 900 micrometer fiber with a collimating glass ), was used at a 5mm focal distance and moved permanently over the gel surface. Dental sensibility was monitored ,before and after each step of laser application, by an electronic pulp tester that evidenced a temporary increase ,soon normalized.

## RESULTS

In both cases digital photography (1) and the use of shade guide (2) showed significant differences in chroma value and whiteness (Vitapan Classical Shade Guide ).



Diode laser (810nm) Orotig



Er/NdYAG (2940/1064nm)  
laser Fotona

## CLINICAL REPORT

### Case 1: DIODE laser (810 nm.)

- Whitening handpiece: 5mm focal distance
- Spot diameter: 1 mm<sup>2</sup>
- Output power: 2W
- Mode : CW
- Theoretical Power Density: 266W/cm<sup>2</sup>
- Laser working time: 60 mn.
  - step 1: 30 min.(30 sec x 20 teeth) x 3
  - step 2: 30 min.(30 sec x 20 teeth) x 3



### CASE 2: Nd.YAG laser (1064 nm.)

- Whitening handpiece: 5mm focal distance
- Spot diameter: 1 mm<sup>2</sup>
- Output power: 2W
- Mode: pulsed (100mJ x 20 Hz )
- Theoretical Power Density: 266W/cm<sup>2</sup>
- Laser working time:(60 min.total)
  - step 1: 10 min.(30 sec x 20 teeth) x3
  - step 2: 10 min.(30 sec x 20 teeth) x3



## CONCLUSIONS

The objective of laser-assisted bleaching in-office procedures is to achieve clinical results in a short time, avoiding any adverse effect. Several investigations confirmed that many wavelengths can activate the process of bleaching (3,4,6,7). In this clinical trial we compared the aesthetical results of two infrared wavelengths utilizing the same technical parameters. The use of two different laser sources in similar clinical and therapeutic conditions showed the possibility to exploit the same equipment, required in our daily practice in other fields of oral application, to obtain good clinical results also in cosmetic dentistry.

## LITERATURE CITED.

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