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> [Photodiagnosis Photodyn Ther](#), 25, 87-91 Mar 2019

Effect of Photodynamic Therapy by 810 and 940 Nm Diode Laser on Herpes Simplex Virus 1: An in Vitro Study

Mahsa Alavi Namvar¹, Mohammad Vahedi², Hamid-Reza Abdolsamadi³, Alireza Mirzaei⁴,
Younes Mohammadi⁵, Farid Azizi Jalilian⁶

Affiliations

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Abstract

Introduction: Herpes simplex virus (HSV) is among the most common viruses in humans. HSV1 is often responsible for oral and perioral herpetic lesions. Photodynamic therapy (PDT) is a novel antimicrobial modality that involves the use of laser and a photosensitizer with a specific wavelength. This study aimed to assess and compare the effect of PDT with 810 and 940 nm diode laser and indocyanine green (ICG) photosensitizer on HSV1.

Methods: In this in vitro study, HSV1 isolated from herpes labialis and there were 6 experimental groups. The irradiation parameters were the same for all groups. Number of remaining viruses per milliliter in each group was determined using real-time polymerase chain reaction (PCR) and statistically analyzed by ANOVA.

Results: The virus count in all groups significantly decreased compared to the control group ($P < 0.05$) except in group ICG- without irradiation ($P > 0.05$). Comparison of groups 810- and 940- (use of each laser alone) with groups 810+ and 940+ (use of each laser plus ICG) revealed that reduction in virus count in groups 810+ and 940+ was significantly greater than that in groups 810- and 940-.

Conclusion: 810 nm diode laser irradiation and ICG causes the greatest reduction in number of HSV1 compared to all the other groups. ICG without laser irradiation has not significant efficacy on reduction of virus count.

Keywords: Herpes simplex virus 1; Indocyanine Green; Photodynamic therapy.

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