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| Categories: | P5 Refractive |
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| Title: | Reactive Oxygen Species Generated by 193 nm Excimer Laser and 213 nm Solid State Laser |
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| Purpose: | Laser in ultraviolet region for refractive surgery generates reactive oxygen species (ROS), which affects corneal wound healing. This study was performed to investigate the sorts and the amount of ROS generated by two different types of lasers for refractive surgery. |
| Methods: | One hundred and ninety three-nm excimer laser (Z100, Bausch & Lomb) and 213-nm solid state laser (Pulzar Z1, CustomVis) were emitted to 5, 5-dimethyl-1-pyrroline N-oxide (DMPO) solution, a spin-trapping agent. The amount of laser emission was adjusted to correct myopia of 5 diopters. The ablation depth of central corneal ablation and the total ablation diameter were set to be 87 μ m and 9.1mm, respectively. Superoxide anion and hydroxyl radical generated in DMPO solution were analyzed by electron spin-resonance spectroscopy. |
| Results: | The spin-trapping adducts for hydroxyl radical were mainly generated when the two types of lasers were emitted to DMPO solution. In a quantitative analysis, the solid state laser appeared to produce less amount of ROS. |
| Conclusion: | The two types of lasers for refractive surgery with different wavelengths showed different characteristics in terms of ROS generation. Further study is required to find out whether this finding can be extrapolated to the difference in the corneal tissue reaction. |